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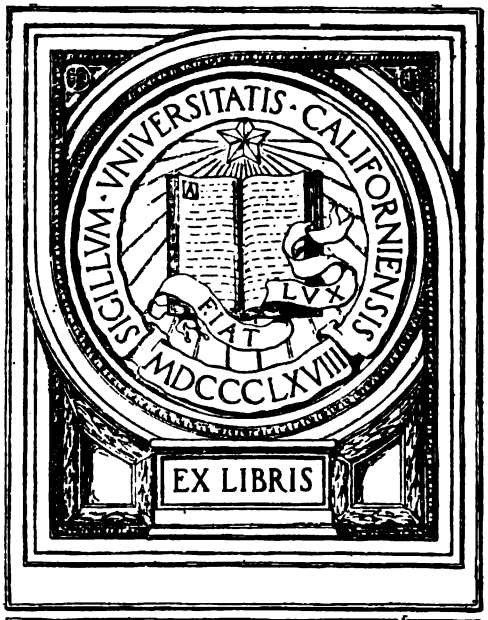

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SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 66, NUMBER 6

PHONETIC TRANSCRIPTION OF INDIAN LANGUAGES

REPORT OF COMMITTEE OF AMERICAN ANTHROPOLOGICAL ASSOCIATION

(PUBLICATION 2415)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
SEPTEMBER, 1916

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Plummers book fund

The Lord Baltimore Press
BALTIMORE, MD., U. S. A.

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PHONETIC TRANSCRIPTION OF INDIAN LANGUAGES

REPORT OF COMMITTEE OF AMERICAN ANTHROPOLOGICAL ASSOCIATION

The following report is based on several meetings held in New York in January, 1913, April and May, 1914, and January, 1915, by a quorum of the committee of the American Anthropological Association, charged with the drawing up of a phonetic system for transcribing Indian languages, consisting of F. Boas, Chairman, P. E. Goddard, and E. Sapir, Secretary, further on correspondence with the remaining member of the committee, A. L. Kroeber.

GENERAL PRINCIPLES

It is essential that each simple sound be consistently represented by the same symbol.

These symbols, as far as possible, should be those associated in past use with sounds similar to the ones they are chosen to represent.

For the sake of appearance and to avoid distracting the attention of the reader, mixture of fonts and unusual characters should be avoided unless indispensable.

In texts accompanied by interlinear translations all characters and marks of punctuation not strictly phonetic, such as capitals, commas, and periods, should be eliminated excepting, however, symbols introduced for facilitating grammatical analysis.

In order to reduce the cost of publishing texts, only such diacritical marks and accents as are essential for adequate transcription should be employed.

Where a uniform and fairly adequate system has already been employed in the recording of a particular language, it will usually be best to continue its use in further work with that language to facilitate comparisons and to avoid confusion. For purposes necessitating the comparison of different languages and requiring phonetic accuracy the more rigid system should be applied.

The committee considers that the needs to be met by a phonetic system for transcribing American languages are several. For the specialist who wishes to analyze and discuss the sounds of a language a very considerable number of symbols and a variety of modifying accessories in the form of diacritical marks and accents are necessary.

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Such an elaborate system proves too complicated for students who are less thoroughly trained in phonetics and therefore less discriminating in their perception of sounds. For the recording and printing of large bodies of texts, a too elaborate and detailed system is expensive and often impracticable. The main objects to be secured in a large series of texts are a full vocabulary and ample illustrations from which the range in the meanings of words and phrases can be deduced. It is not necessary that words recurring many times in such texts be transcribed each time by symbols indicating all their phonetic features. It is, however, necessary that each phonetic unit be unmistakably distinguished from all others.

The committee has been led, therefore, to submit a comparatively simple system of transcription adapted to the ordinary purposes of recording and printing texts. To provide for the recording and discussing of the complex and varied phonetic phenomena encountered in American linguistics, a fairly detailed and comprehensive system has been provided. It is necessarily of such character that it can be employed only by a specialist in phonetics. By its aid it is to be hoped that the phonetic features of all of the extant North American languages may be discussed and compared.

A. RULES FOR THE SIMPLER SYSTEM

I. VOWELS

1. *Quality.*—It is important that each vowel having a distinct quality or timbre be represented by a definite character. Since the Latin alphabet has only five vowel characters, it will usually be necessary to supply others. For a full system of vowels the use of Greek characters is recommended. Since these are not always available and present other difficulties in their use, Roman characters with a diacritical mark above the letter, particularly macron (ā), may also be utilized. The following symbols are recommended:

a, as in English *father*.	ɑ, as in English *but*.
ä, as in English *hat*.	
e, as in English *fate*.	ɛ, as in English *met*.
i, as in English *pique*.	ɪ, as in English *pin*.
o, as in English *note*.	ɔ, approximately as in English *not* (better as *o* in German *voll*).
u, as in English *rule*.	ʊ, as in English *put*.

These values correspond exactly to the recommendations of B (see p. 9). If it is desired to avoid Greek characters, ɔ, and ä, the following alternate system is recommended:

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a, as in English *father*.	å, as in English *but*.
ă, as in English *hat*.	
ē, as in English *fate*.	e, as in English *met*.
ī, as in English *pique*.	i, as in English *pin*.
ō, as in English *note*.	o, as in English *not* (better as *o* in German *voll*).
ū, as in English *rule*.	u, as in English *put*.

For vowel qualities due to mixed positions, such as the umlauted *o* and *u* in German, two dots above the letter are recommended (*ö*).

The obscure vowel, found for instance in English *a* of *idea,* may be rendered by *ə* (turned *e*).

Vowels of any timbre as determined by the shape of the mouth cavity may be further modified by the addition of the resonance chamber of the nose. Such nasal quality in vowels (as in the French nasalized vowels) may be indicated by adding beneath the letter a hook turning to the right (*ǫ*).

It is to be understood that if only one of the qualities usually associated with a roman letter occurs in the language in question, that letter is to be used without a diacritical mark (similarly, *o* is to be used instead of turned *c* (*ɔ*) if there is only an open *o* in the language).

2. *Duration.*—The duration or quantity of vowel sounds, often an essential matter, may be indicated by placing a mark after the vowel. It is recommended that a turned period (*a*˙) or a colon (*a*:) be used for vowels long in duration, and a breve (*a*˘) for those unusually short. It is important that these marks be used after the vowels to avoid confusion between duration and quality or timbre, since they are not necessarily connected, as is generally assumed to be the case in English.

3. *Pitch.*—In certain languages vowel sounds are distinguished from each other by definite variations in pitch. When such variations of pitch are essential, the acute accent over the vowel (*á*) should be used for high pitch, and grave (*à*) for low pitch, the circumflex (*â*) for falling pitch, and the inverted circumflex (*ǎ*) for rising pitch. When it becomes necessary in the recording of a language to use these accents to represent pitch, similar diacritical marks for quality over the vowels are best avoided.

4. *Weak vowels.*—Vowels which are of full duration and strength but not voiced, such as whispered vowels, may well be represented by small capitals. When vowels are slighted in the force of enunciation, but are voiced, exponent vowels should be used (*w*^{ı}).

5. *Stress.*—Where variations in stress are prominent they may be indicated by placing the acute accent (′) after the vowel. Secondary

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accents may be indicated by the grave accent (`). It should be remembered that stress accent is exceptionally marked in English and that it is less pronounced and plays a less important rôle in many American languages. Unless the indication of stress is necessary to distinguish one word from another, it need not be printed each time a word appears in texts.

II. CONSONANTS

1. *Stops.*—The consonants that are usually known as stops, those in which the stream of breath is completely checked for a moment by a closure of the mouth passage, are classified in various ways.

Various organs or parts of organs are employed: both lips, the tip of the tongue against the teeth or palate, the back of the tongue against the palate, the back of the tongue against the velum. The sounds resulting from the release of the contact of these various mouth parts have well-known and distinct qualities, such as the bilabial sounds of *p* and *b*, the dental sounds of *t* and *d*, the palatal sounds of *k* and *g*, and the velar sounds, not found, however, in English.

Various modifications of these stops uttered in the four positions are recognized, and may be grouped in definite series. If the vocal cords are not closed and are not in operation during the uttering of the consonant, it is known as a surd. If the vocal cords are closed and vibrating during the entire time occupied in articulating the sound, it is a sonant. In many Indian languages sounds occur that to the English ear appear now a surd and now a sonant. These stops are called intermediates, and should be consistently represented by definite symbols. Small capitals of the sonant symbols are recommended for these. The ordinary *b, d, g*, may be used when only intermediate surds and not sonants occur. Surd consonants are frequently followed by a strong expiration of breath, and are called aspirated in consequence. Unaspirated surds are usually difficult to distinguish from intermediates.

Many Indian languages have a series of stopped consonants quite foreign to European ears. In addition to and during the usual closure of the mouth characteristic of the particular sound, there is a closure of the glottis. The air thus confined in the mouth is compressed and escapes with abruptness when the stop is released. These glottalized consonants may be indicated by following apostrophe (*p'*).

The following system of recording the stopped consonants is recommended:

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	Sonant	Intermediate	Surd	Surd aspirated	Glottalized
Bilabial	b	B	p	p'	p'
Dental	d	D	t	t'	t'
Palatal	g	G	k	k'	k'
Velar	g̣	G̣	q or ḳ	q' or ḳ'	q' or ḳ'

Labialized and palatalized palatals and velars may be indicated respectively by adding *y* and *w* to the consonantal characters. Thus *gy* represents palatalized *g*, *ky'* glottalized palatalized *k*, and *qw* labialized velar *k*.

2. *Nasals.*—Sounds having closures at the same points and involving the same mouth parts may be uttered with the passage through the nose unimpeded. They may be continuously sounded through the nose or only released through the nose by a lowering of the velum. The following characters will ordinarily be found to be adequate: bilabial, *m*; dental, *n*; palatal, *ñ*; velar, *n̄*.

3. *Spirants.*—Consonants of another sort derive their chief distinctive qualities from the agitation of the mouth parts which by their approximation at certain points form definite strictures in the mouth passage. They are called spirants or fricatives. They fall generally into the same classes and series obtaining for stop consonants. When considered as to the organs involved in their production they are bilabial, labio-dentals (lower lip against the upper teeth), interdentals (tip of the tongue on the points of the upper teeth), dental sibilants (the tip of the tongue just back of the upper teeth), palatal sibilants (the fore part of the tongue with its tip turned down approaching the fore part of the palate), palatals (the back of the tongue approaching the palate), velar (the back of the tongue approaching the velum).

These spirant sounds may be and usually are both surd and sonant for each position. Less frequently they are glottally affected. The following characters are recommended:

	Sonant	Surd	Glottalized
Bilabial[1] / Labio-dental	v	f	f'
Interdental	ϑ	θ	θ'
Dental sibilant	z	s	s'
Prepalatal sibilant	j	c	c'
Palatal	γ	x	x'
Velar	γ̣	x̣	x̣'

4. *Affricatives.*—A series of sounds closely related to the spirants are generally called affricatives. Initially they are like stops, except

[1] Both forms are not likely to occur in the same language and *v* and *f* may be used for either. Proper definition should be given.

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that they are released through the mouth positions of the corresponding spirants into which they immediately merge. It has been customary to write them with two letters, as if they were compound sounds. Were sufficient characters available, it would be better to make use of a single symbol. For practical reasons it is recommended that the following combinations be used:

	Sonant	Surd	Glottalized
Bilabial	bv	pf	pf'
Interdental	dϑ	tθ	tθ'
Dental	dz	ts	ts'
Prepalatal	dj	tc	tc'
Palatal	gγ	kx	kx'
Velar	g̣γ	qx or ḳx	qx' or ḳx'

5. *Semivowels.*—Closely associated with the bilabial and palatal spirants are two sounds produced with less evident agitation of the approximated surfaces. These are the semivowels, *w* and *y*. They are frequently voiceless, when a small capital *ʏ* may be used and an italic *w*, since small capital is not sufficiently distinct from lower case *w*.

6. *Trills.*—At various points where the mouth passage is constricted a mouth part may be bodily vibrated. When the tip of the tongue is turned up toward the palate and allowed to vibrate in a current of air, *r*-like sounds are produced. The tip of the velum, the uvula, may be caused to vibrate in a similar manner, resulting in the uvular *r* heard in some parts of Germany and France. The following symbols are recommended: tongue tip, sonant *r̥*; surd *ʀ* (small capital); uvular, sonant *ṛ*; surd *ʀ̥*.

The surd velar *r* is hardly to be distinguished from the surd velar spirant, since the uvula may vibrate in the surd spirant also.

7. *Laterals.*—The consonant sounds so far discussed are occasioned by the release of stops, or by narrow passages in the middle line in the mouth. There are other sounds made at the side of the mouth between the teeth and the edge of the tongue. The best known is an *l* sound found in English and all European languages. It is a sonant and is given a part of its quality at least by a movement of the side of the tongue similar to that of the tip of the tongue in the *r* sounds.

In many of the American languages there are lateral spirants made between the side of the tongue and the upper teeth. The spirant quality is pronounced only when surd. The sonant spirants approximate the "liquid" or trilled *l* of English. These lateral spirants

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may be preceded by a closure forming an affricative similar to the medial affricatives. The symbols recommended are the following:

	Sonant	Surd	Glottalized
Lateral trill	l		
Lateral spirant		ɬ or ʟ[1]	ɬ' or ʟ'
Lateral affricative	dl	tɬ or tʟ	tɬ' or tʟ'

8. *Glottal.*—In American languages a peculiar hiatus is frequently found between vowels, and a similar cessation of the breath precedes and follows vowels. This closure is of the glottis, and is in all probability caused by the folding of the epiglottis over the glottis, as is the case in swallowing. It is recommended that the apostrophe (') be used. As noted above, this glottal closure also occurs with glottalized consonants.

A glottal spirant, evidently caused by the agitation of the relaxed vocal cords during the forcible expiration of the breath, does not differ particularly from the *h* of English. Strong aspiration should be indicated by *h,* weak aspiration by breathing (ʿ).

B. RULES FOR THE MORE COMPLETE SYSTEM

DIACRITICAL MARKS USED INDEPENDENTLY

1. As a sign for long vowel or consonant, it is recommended that the inverted period (·) be used after a letter. For more than ordinary length, a colon (:) may be used after a letter. Thus, *a*· would denote long *a; a*: would denote excessively long *a*. Excessive length of non-grammatical significance, such as is often made use of for rhetorical purposes, may be expressed by plus (+). Characters without explicit signs of length are to be considered as short. Excessive shortness of vowels is to be indicated, where it seems advisable to do so, by a small superior breve (˘) immediately after the letter. It is to be recommended that it be printed small and close to the preceding letter, so as not to sprawl the word.

2. Main and secondary stress accents are to be indicated by acute (ˊ) and grave (ˋ) respectively, which are to be placed after the vowel or syllabic consonant affected. Where an accent and a mark of length apply to the same vowel, it is recommended that the two symbols be united into a single symbol, so as to avoid sprawling the word. Thus, ˊ˘ ˋ˘ and ˆ˘.

3. A period on the line is to be used between characters normally forming diphthongs or affricatives, when it is desired to indicate that each of the sounds represented has its own (syllabic) value. Thus,

[1] Small capital L.

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a.i is non-diphthongal *a* plus *i*, *ai* being the corresponding diphthong. Similarly, *t.s* is the non-affricative *t* plus *s*, corresponding to the affricative *ts*.

4. Hyphens should not be used for phonetic purposes. They may, however, be used to indicate morphological analysis. Where, in continuous text, it seems advisable to indicate somewhat loosely affixed elements (prefixes and suffixes not thoroughly welded with stem) by means of hyphens, double hyphens may be used at the ends of lines to indicate a break in the word not meant to be of morphologic significance.

VOWELS

5. Pitch accent, where indicated at all, should be expressed by means of diacritical marks over the vowel. These diacritical marks are also to be used over sonant continuants (such as *l*, *m*, *n*, *w*, *z*) where these bear the pitch accent. The fundamental difference between the system of pitch accent here recommended (the same as has been fully described by Father W. Schmidt in various articles in "Anthropos") and that of indicating stress is that the diacritical marks for the former stand immediately above the letter, whereas those for the latter follow. High pitch is to be indicated by an acute accent (´) over the letter; low pitch is to be indicated by a grave accent (`) over the letter; falling accent from high to low is to be indicated by a combination of the acute and the grave, i. e., by the circumflex accent (ˆ); rising accent from low to high is to be indicated by a combination of the grave and acute accents, i. e., by the inverted circumflex accent (ˇ). When it is necessary to indicate middle pitch, this may be done by a vertical line above the vowel (ˈ).

6. Voiceless vowels, that is, aspiration with definite vocalic timbre, should be indicated by means of small capitals of corresponding vowels.

7. Nasalization should be expressed by means of a hook, turned to the right, placed under the vowel or voiced continuant. Thus, nasalized *a* is indicated by *ą*. This device may also be employed to indicate semi-nasalized consonants. Thus, *b̨* would indicate semi-nasalized *b*, acoustically midway between *b* and *m*.

8. What might be rather vaguely termed subsidiary or weakly articulated vowels of various sorts are to be expressed by means of superior or inferior characters. Rearticulations (such as often occur in Indian languages, e. g., $a^{\cdot a}$ in Takelma), vocalic glides, murmured or echo vowels pronounced with feeble energy, yet not

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entirely voiceless (such as often occur in America after glottal stops), vocalic resonance of preceding consonants, and whispered vowels are all to be expressed by superior or inferior vowels. The exact usage of superior or inferior vowels should be carefully explained in the key in every case, so as to avoid possible confusion. If it is desired to distinguish between vocalic timbres and weakly articulated voiceless vowels on the one hand and vocalic glides and weakly articulated voiced vowels on the other hand, superior vowels (^{a}) may be used for the former, inferior vowels ($_{a}$) for the latter.

9. The representation of vocalic qualities here recommended attempts to combine, as far as possible, the requirements of ordinary usage with the demands of a consistent scientific system. The phonetic analysis serving as a basis of the system has been taken from Sweet's "Primer of Phonetics."

The five vocalic symbols serving as a starting point in this system are: *a*, pronounced as in German *Mann*; *e*, pronounced as in French *été*; *i*, pronounced as in French *fini*; *o*, pronounced as in German *so*; and *u*, pronounced as in German *gut*.

Roughly speaking, the Greek forms of these letters indicate the open (Sweet's wide) forms of the same sounds. For Greek omikron, which would be easily confused with *o*, inverted *c* (ɔ) is substituted. Thus, upsilon (υ) represents *u* of English *full*; turned *c* (ɔ) represents *o* of German *voll*; epsilon (ε) represents *e* of English *met*; iota (ι) represents *i* of English *it*; alpha (α) represents *u* of English *but*. According to Sweet's phonetic analysis, *a* is the wide form of *a*, but general usage demands the retention of *a* for the value here recommended. The principle of simplicity (see last paragraph of A, I, 1) will, in most cases, involve considerable simplification of this system. Thus, where but one form of *i*-vowel is in use, the simple symbol *i* will be used for either the close or open variety.

Rounded forms of front vowels are to be indicated by the umlaut (¨) over the corresponding rounded back vowels. Thus, *ü* indicates the vowel of German *kühl* or French *lune*; *ö* represents the vowel of German *schön* or French *bleu*; *ÿ* represents the first vowel of German *Mütze*; ɜ represents the first vowel of German *Götter*.

The use of the umlaut may be extended to indicate high-back-unrounded vowels, the corresponding high-front-unrounded vowels being taken as points of departure. Thus, *ï* and *ï* represent the high-back-unrounded representatives of *i* and *ι*, in other words, the unrounded forms of *u* and *υ*. Both of these sounds occur, for example, in Shoshonean.

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A natural extension of the system, as developed up to this point, is the use of a single dot over a vowel to indicate articulations midway between front and back, that is, all vowels belonging to Sweet's "mixed" category. Thus, *ụ* represents the vowel acoustically midway between *u* and *ü*, an example of which is *ụ* of Swedish *hus*. To avoid confusion with ordinary *i*, the superior dot of the *i* of this series should be printed a little to the left (*ˈi*).

For the low-back-narrow-rounded vowel (the English *aw* of *law*), omega (*ω*) may be used; the corresponding low-front-narrow-rounded vowel, the *eu* of French *peur*, is indicated by *ö̈*, which thus falls in line with *ü* and *ö*. The vowel midway in position between *ω* and *ɷ̈* is *ω̣*.

For the other vowels of Sweet's scheme no specific symbols are recommended as yet.

An obscure vowel of undefined quality may be represented by turned *e*, i. e., *ə*.

CONSONANTS

10. Small capitals are to be regularly used to indicate voiceless forms of consonants ordinarily voiced (lateral continuants, trilled consonants, nasal continuants). Thus, *L*, *M*, *N*, and *R* indicate voiceless *l*, *m*, *n*, and *r*, respectively. In the case of stops and spirants, where distinct characters are used for corresponding voiced and voiceless forms, the small capital is to be used to indicate a surd-sonant intermediate (intermediate consonants here include voiceless consonants pronounced with stress ordinarily characteristic of sonant consonants, also surd consonants that are sonant at the moment of release). Thus, *G* indicates the intermediate between sonant *g* and surd *k*; similarly, *z* (slightly higher than lower case *z*) indicates the consonant intermediate between *s* and *z*, equivalent to J. O. Dorsey's turned *s*.

Weakly articulated or barely audible consonants, also consonantic glides, are to be represented by superior letters; thus, Malecite *ᵖm–* and Wyandot *–ⁿd–*.

11. A point beneath the consonant is regularly used to indicate a point of articulation posterior to the standard point of articulation adopted for the simple character. Thus, *ḍ* represents a *d* pronounced with the tip of the tongue articulating against the palate back of the alveolar ridge, that is, the cerebral *d*. Similarly, *ḳ* may be used to indicate a velar *k*.

A semicircle beneath the letter (̑) is regularly used to indicate a point of articulation in front of the standard one adopted for the

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sound indicated by the simple character. Thus, $\hat{t}$ represents dental *t*, as in Slavic; $\hat{g}$ indicates prepalatal *g*.

12. Four main types of articulation are recognized for the stopped and affricative consonants of each position; the sonant, the surd, the intermediate (indicated by small capital forms of letters representing sonant stops), and aspirated surd (represented by the sign of aspiration (') following the symbol for voiceless surd stop). Other types of consonants involving synchronous articulations will be discussed below.

13. Three main positions are recognized for stopped consonants: the bilabial, the linguo-dental or linguo-alveolar, and the linguo-palatal or guttural. The sonant of the first position is indicated by *b*, its corresponding surd by *p*, intermediate by ʙ, aspirated surd by *p'*. The voiced nasal continuant of this series is represented by *m*, its voiceless form by ᴍ; the semi-nasal stop may be indicated by $\mathring{b}$.

14. In parallel fashion, *d*, *t*, ᴅ, and *t'* indicate corresponding consonants of alveolar position (the tip or blade of the tongue and the alveolar ridge are here taken as the standard point of articulation for the linguo-dental and linguo-alveolar consonants). $\dot{d}$, $\dot{t}$, $\dot{\text{D}}$, $\dot{t}'$ indicate the corresponding sounds for the true dental series. $\hat{d}$, $\hat{t}$, $\hat{\text{D}}$, and $\hat{t}'$ indicate the corresponding sounds for the cerebral series.

The voiced and unvoiced nasals for the three positions defined above are respectively *n*, ɴ; $\dot{n}$, $\dot{\text{N}}$; $\hat{n}$, $\hat{\text{N}}$.

15. Between the alveolar and guttural consonants is a set of dorsal consonants, produced by the upper surface of the tongue articulating against the forward part of the palate. Such consonants are indicated by Greek letters. The four stops parallel to those enumerated for the preceding positions are δ, τ, Δ, and τ'; the corresponding nasals are ν and small capital ν (inasmuch as capital ν is identical with English *N*, it is recommended that the lower case ν be used in somewhat enlarged form).

$\dot{\delta}$, and correspondingly for the other characters of the series, would indicate dorsal consonants produced by articulating with the middle surface of the tongue against or just back of the teeth; $\hat{\delta}$, and correspondingly for the other characters of the series, would indicate dorsal consonant produced by articulating with the middle surface of the tongue against the back part of the palate.

16. The symbols, *g*, *k*, ɢ, and *k'* indicate the guttural consonants produced by articulating with the back of the tongue against the posterior part of the palate; the position given by *g* of English *good*

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may be taken as the standard. The corresponding voiced nasal (*ng* of English *sing*) is indicated by η; its voiceless form by $\dot{N}$.

The front palatal series (illustrated by *k* of English *kin*, or still more markedly by the anterior palatal *k*-sounds of several West Coast languages) is represented by $\underset{\frown}{g}$, $\underset{\frown}{k}$, $\underset{\frown}{G}$, $\underset{\frown}{k}'$; and the corresponding nasals by $\underset{\frown}{\eta}$ and $\underset{\frown}{N}$.

The back palatal series, produced by the back of the tongue articulating against the velum, is represented by $\dot{g}$, $\dot{k}$ (or *q*), $\dot{G}$, and $\dot{k}'$; the corresponding nasals are $\dot{\eta}$ and $\dot{N}$.

17. The rounded voiced bilabial spirant, or semivocalic *u*, is to be represented by *w*; its voiceless correspondent, *h* (i. e., as used in transcriptions of Gothic for *hw*). Unrounded bilabial spirants (Eskimo *f* and *v*, according to Kleinschmidt's orthography) are to be represented by ϕ (voiceless) and β (voiced). The dento-labial spirants are respectively represented by *f* and *v*.

The interdental spirants (*th* of English *thick* and *then*) are to be indicated respectively by the two forms of Greek theta, θ (voiceless) and $\eth$ (voiced). The spirants corresponding to the various *t*-sounds are to be represented by *s* and *z*; variations of position may be indicated as in the case of *t*-sounds, *s* and *z* representing the ordinary alveolar sibilants, $\underset{\frown}{s}$ and $\underset{\frown}{z}$ the dental sibilants, and $\dot{s}$ and $\dot{z}$ the corresponding cerebral sibilants. Dorsal sibilants may be represented by σ (voiceless) and ζ (voiced), which symbols, however, need be used only when it is necessary to distinguish explicitly between dorsal and apical sibilants; as in the case of the other sibilants, forward and backward points of articulation may be indicated by $\underset{\frown}{\sigma}$, $\underset{\frown}{\zeta}$, and $\dot{\sigma}$, $\dot{\zeta}$, respectively.

The spirants corresponding to the various *k*-series are to be represented by Greek χ (or $\varkappa$) and γ, which correspond in position to *k* and *g*. The prepalatal spirants are to be indicated by $\underset{\frown}{\chi}$ (as in German *ich*) and $\underset{\frown}{\gamma}$ (*y*, pronounced as in English *yes*, will be the ordinary symbol for the voiced spirant of this position, but it will be convenient sometimes to use the symbol $\dot{\gamma}$ for a voiced spirant of the same or slightly posterior position of non-vocalic effect); for $\underset{\frown}{\chi}$ may, where convenient, be substituted $\underset{\frown}{\varkappa}$. The back palatal spirants are $\dot{\chi}$ and $\dot{\gamma}$, for the former of which may, where convenient, be substituted $\dot{\varkappa}$.

Spirants that are intermediate, as regards voicing, between typical surd and sonant spirants, may be represented by small capitals of the corresponding characters for voiced spirants.

Any spirant may be nasalized, to indicate which the hook, as usual, is employed. Thus, $\underset{\frown}{z}$ would represent the *z* of English *zeal*, but nasalized.

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18. The sibilants of thickish quality (English *sh* and *z* of *ship* and *azure*) are to be represented by *c* (voiceless) and *j* (voiced). Forward and backward articulations of these sounds are respectively represented by *c̲, j̲; c̣, j̣* (cerebral *c*-sounds).

19. Affricatives, that is, consonantal diphthongs consisting of stop followed by spirant of identical position, should always be written analytically, that is, both stop and spirant should be represented. Thus, *pɸ* is the voiceless affricative of unrounded bilabial position; *dz* is the voiced affricative of *t*-position. The same manner of writing applies to affricatives the spirantal element of which is a *c*-sound.

If the stop and following homorganic spirant do not form an affricative but preserve their individuality, a period is to be put between them; thus, *t.s.*

20. All lateral sounds are to be indicated by *l* or *l*-like characters, the standard *l* being defined as an apical voiced *l* of alveolar position; the corresponding voiceless sound is ʟ or *ɬ*. The corresponding dental and cerebral *l*-sounds are *l̪*, ʟ̪, (*ɬ̪*); and *ḷ*, ʟ̣, (*ɬ̣*), respectively.

Dorsal *l*-sounds are to be indicated by λ (voiced) and small capital lambda, ʌ (unvoiced). Forward and backward articulations of dorsal *l* may be represented by means of *λ̟*, *ʌ̟*; and *λ̠* (this would be the back-*l* found in many Slavic languages), *ʌ̠*.

Lateral affricatives, that is, *t*- or *k*- stop merging into lateral spirants, should be indicated analytically as in the case of all affricatives. *tt* and *dl* would be the normal characters used for the voiceless and voiced dorsal lateral affricatives, while the systematic rendering of these sounds is τʌ and δλ. *kl*-sounds may also occur.

Nasalized laterals can be indicated by *l̨* and correspondingly for other *l*-sounds.

21. All rolled consonants (*r*-sounds), whether markedly trilled or not, are to be indicated by *r* or *r*-like characters. *r* indicates a voiced tongue-tipped rolled consonant in alveolar position; *r̪* is the corresponding sound of dental position; *ṛ* the cerebral *r*. The corresponding voiceless consonants are respectively ʀ, *ʀ̪*, and *ʀ̣*.

The uvular *r* is to be indicated by Greek rhō (ρ); the corresponding voiceless uvular *r*-sound is to be represented by small capital (ʀ), which is best printed as small capital italic *ρ*: *ʀ*.

If it is necessary to distinguish untrilled (or weakly trilled) from markedly trilled *r*-sounds, a macron is to be put above the character to indicate the latter type. Thus, *r̄* denotes strongly trilled cerebral *r*.

Nasalization, as usual, is to be expressed by the hook beneath a character. Thus, *ɾ̨* indicates nasalized uvular *r*.

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22. Aspiration, as already indicated above in treating of aspirated surds, in serving as a consonantal release or concluding a syllable after a vowel, is to be indicated by breathing (ʿ). Aspiration as an independent consonant is to be indicated by *h* when strong, by breathing (ʿ) when weak.

Nasalized breath may be represented by ̨ʿ or *h̨*. Nasalized breath with definite vocalic timbre may be indicated by putting the sign for aspiration under the vocalic character: thus, *i̯*. Voiceless stopped consonants with nasalized breath release and continuance of oral contact during release may be indicated by putting the sign for nasalization under the character for the stopped consonant: thus, *p̨*.

The peculiar strangulated-sounding *h*-sounds found in Nootka and Arabic may be indicated by *ḥ*.

23. The glottal (epiglottal) stop is to be indicated by an apostrophe, '. Broken vowels, that is vowels cut in two by a glottal stop, may be rendered *a'a* or *a'ᵃ*, and correspondingly for other vowels; the latter orthography is to be employed when the postglottal part of the vowel is weakly articulated (murmured or whispered).

A simple glottalized consonant, that is, a voiceless consonant pronounced with simultaneous closure of the glottis, and whose release also is simultaneous with that of the glottal closure, may be indicated by putting the ' over the character; thus, *ṕ* indicates a glottalized *p* (such consonants are found in Southern Paiute and in Delaware). *p'*, and correspondingly for other consonants, indicates a consonant whose release is immediately followed by a glottal closure.

A common type of glottalized consonant in American languages is the so-called "fortis." These consonants are generally pronounced with simultaneous glottal closure and with glottal release subsequent to that of the oral release. We may distinguish here between the simple glottalized stop and the true fortis produced with very high pressure and accompanying increased muscular tension of the articulating organs, which gives to the sound its abrupt exploded character. It is recommended that the orthography already in use (namely, *p!*, and correspondingly for other consonants) be retained for the true fortis; *ṕ* (and correspondingly for other consonants) should be used to indicate the more weakly articulated glottalized consonant of this type.

A "glottal trill," that is, a vowel broken up by a rapidly succeeding series of glottal closures (German "Knarrstimme"), may be indi-

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cated by putting the apostrophe over the vowel. Thus, $\dot{a}$ is glottally trilled *a*.

A peculiar strangulated-sounding glottal stop found in Nootka, and bearing the same relation to the ordinary glottal stop that $\dot{h}$ bears to *h*, may be indicated by $\dot{'}$.

24. Special modifications of consonants may be brought about by synchronous articulations, that is, by the simultaneous action of some other part of the speech apparatus than is primarily involved in the production of the consonant. Nasalized and glottalized consonants, two types of such "doubly articulated" consonants, have already been discussed. Aside from glottalization, all such synchronous articulations should be indicated by diacritical marks beneath the character or by closely following inferior characters. This method seems preferable to indicating them by means of superior characters, as in this way confusion is avoided with consonantal glides.

Labialized consonants, that is, consonants pronounced with simultaneous lip-rounding, are to be indicated by means of inferior *w* closely following the character. Thus, l_w indicates an *l* pronounced with markedly rounded lips; similarly, k_w indicates a *k* with simultaneous lip-rounding (not to be confused, of course, with *kw*).

Palatalized consonants, that is, consonants modified by the simultaneous articulation of a large part of the surface of the tongue against the palate (in other words, by the tongue taking *y*-position), are to be indicated by closely following inferior *y*. Thus, n_y indicates a palatalized dental *n*. The ordinary so-called "palatal" *l* and *n* are probably best considered as palatalized dorsal *l* and *n* and should thus, strictly speaking, be indicated by λ_y (Italian *gl*) and ν_y (Italian *gn*); l_y and n_y would, however, be the normal methods of representing these consonants.

In some languages a vowel or consonant may be given a distinct velar or guttural resonance, due to the fact that during the production of the sound an approximation is made of the tongue and velum or tongue and posterior palate to velar or guttural closure without such closure being actually attained. No symbol is expressly recommended here for gutturalized and velarized sounds, but these sounds, where noted, should be definitely indicated in some way.

25. If a consonant forms its own syllable without a preceding or following vowel, that fact may be indicated by placing a small circle under the character. Thus, $\underset{\cdot}{n}$ indicates syllabic *n*, as in English *button* (*ba't$\underset{\cdot}{n}$*).

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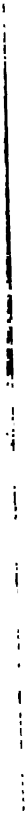

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Extract from Folk-Lore, December 1917.

2

Ethnological Suggestions in regard to EASTER ISLAND or RAPANUI.

By Henry Balfour, M.A.

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THE COMPLIMENTS OF
HENRY BALFOUR.
LANGLEY LODGE
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ers had been taken at the same
é; both parents went and the
one in each hand, and the mother
and the maori sang; they did
go to Orongo because there was war. A drawing was made for us of the poki manu in ceremonial attire, from which it appears that concentric circles of white pigment were made on the child's back and also one on each buttock. A circle in the same position is seen on the back of both the stone and wooden images, and in the case of one stone statue, which had been buried in the sand, was also found on the buttocks.

We have at present, therefore, the following evidence connecting the Bird Cult with the images: the bird-man spent his official year on the mountain where they were quarried, the bird initiation for children was performed in connection with statues and the ring design on the back of the images was reproduced for the ceremony on the back of the children. The old people recognized the rings and girdle of the images as a tattoo design of their youth, and it was volunteered that it was especially affected by tangata-tapa-manu. Above all, we have the fact that in a place of honour in the village of Orongo, which was solely devoted to the Bird Cult, is a typical image. It appears then evident that the people who originally celebrated the Bird Cult included in it reverence for the statues. The ancestors of the present inhabitants were, therefore, either the makers of the monoliths of Easter Island, or, if the bird worshippers represent a more recent immigration, the old religion of the images blended into and survived with the newer culture.

KATHERINE ROUTLEDGE.

For maps and illustrations of Easter Island, see *Geographical Journal*, May, 1917.

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SOME ETHNOLOGICAL SUGGESTIONS IN REGARD TO EASTER ISLAND, OR RAPANUI.

BY HENRY BALFOUR.

I HAVE been invited to contribute as a supplement to Mrs. Routledge's most interesting paper on Easter Island the gist of certain suggestions which I have recently made concerning the ethnology of the island. I have great pleasures in so doing, although my ideas have as yet had but little chance of maturing and are still in a somewhat embryonic state. My spare time has been given up to war-work abroad, and I have in consequence been unable to refer to much of the material contained in museums and in the literature. The following notes I offer as a tentative sketch only, with the idea of suggesting what may prove a fruitful line of enquiry. The solution of the ethnological problem of Easter Island culture has always presented the greatest difficulty, and it still remains one of the most baffling of puzzles. One is glad that the case has been re-opened for discussion by the enterprising and remarkable expedition which was undertaken by Mr. and Mrs. Routledge and has been so happily brought to a successful conclusion.

There are certain prominent features in the culture of the Easter Islanders with which especially I wish to deal, in the hopes that I may be able to suggest certain lines of enquiry which may prove of value to those who propose to pursue researches in this subject, and who aim at diagnosing the complex cultural elements which are so striking a feature of this remote volcanic island. These are (1) the

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mataa, or implements of obsidian, (2) the carved wooden figures representing the human form, (3) the huge monolithic statues, (4) certain rock-sculptures in relief, engravings and paintings representing birds and bird-headed human figures, (5) the very remarkable ideographic script, (6) the elaborate bird-cult. These I will deal with briefly *seriatim*.

I. ***The mataa, or obsidian implements, which have been found in great abundance over the island.*** These are for the most part roughly made from flakes (often very large and thick) struck from the blocks of volcanic glass. In the more characteristic examples, the butts are more or less carefully trimmed down by flaking so as to form peduncles or tangs for hafting on the ends of wooden handles. The broad blade is usually left unaltered, and as the shape depends upon that assumed by the flake when struck off the block, many of the implements are very irregular and unsymmetrical in outline. Some examples show a slight trimming of the edges to improve the form of the blade, but these are exceptional. The more typical and perfect specimens in their outline resemble the "ace of spades" (Fig. 1).

Now this implement is not only characteristic of but almost peculiar to Easter Island, and parallels to it are by no means easy to find. An interesting analogy is seen in a fine obsidian blade with hafting tang which was found below the surface of the ground in a creek draining into the Yodda Valley in the Northern Division of British New Guinea. It is in the possession of Mr. D. Ballantine. This specimen has been described and figured by Dr. C. G. Seligmann,[1] who draws attention to the striking resemblance to the *mataa* of Easter Island. It is, however, of better workmanship than the latter, the tanged butt is more carefully flaked to the desired form; also the shoulders are steeply and symmetrically sloped in a manner which is

[1] *Man*, Nov. 1915, No. 91, pl. M.; also in *Anthrop. Essays presented to E. B. Tylor*, 1907, pl. viii. fig. 2, and p. 327.

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not characteristic of the *mataa*. Obsidian implements, other than flakes, are extremely rare in British New Guinea and very few specimens have been procured. It is of interest to note that the above mentioned example comes from a part of New Guinea which is within the area influenced by Melanesian culture.

Among the stone implements of the Chatham Islands are recorded a number of pedunculated blades of flint, chert and schist, to which Giglioli [1] gives the native name *mata* (a name also given to them by von Haast) and which he says resemble exactly the *mataa* of Easter Island, although they are not of obsidian. I have not had access to these Chatham Islands examples, nor have I seen many illustrations of them, so that I cannot tell how far the resemblance holds good. The culture of the Moriori, in the main linked with that of the Maori, suggests traces of a Melanesian element, just as in the culture of the Maori of New Zealand evidence of early Melanesian influence is noticeable, and is supported by the native traditions of an early, pre-Maori, population—a tall, slim, dark-skinned, flat-faced, flat-nosed and furtive and treacherous people, with projecting eye-brows and with hair which was often bushy or frizzly, who were known to the Maori as Maruiwi.[2] These may have been responsible, in part at any rate, for the several Melanesian characteristics observable in Maori art, industries and customs. Many of the Maruiwi eventually found their way to the Chatham Islands, to escape from their Maori oppressors, who nearly exterminated them. It is at least possible that the *mata* of the Chatham Islands may be of Melanesian origin, but this cannot be proved at present with any degree of certainty. I make the suggestion for the sake of its possible bearing upon the Easter Island problem in general.

[1] *Materiali*, 1901, p. 38, and *La Collezione Etnografica*, 1911, pt. i. p. 105.

[2] Elsdon Best, *Trans. New Zealand Inst.* xlviii. 1916, p. 435, etc.

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The only other part of the world which, as far as I can recollect at the moment, offers parallels to the Easter Island *mataa*, is Japan, where tanged or pedunculated blades of stone, frequently of obsidian, occur which certainly recall to some extent the form and technique of the *mataa*. The parallel is not a very close one, however, and the resemblance may, perhaps, be fortuitous.

II. *The carved figures of toromiro wood representing the human form.* These are too well known to need detailed description. Numerous examples have been brought from Easter Island and may be seen in museums, and many have been figured and described. These in their most typical form exhibit a type of conventionalized rendering of the human form which is peculiar to Rapanui and finds no near parallel elsewhere. The nose is often very strongly aquiline, even to a highly exaggerated degree. The brows are exceedingly prominent and overhanging. The staring eyes are of obsidian set in bone. The ears are distended, the lobes being greatly elongated, indicating the custom of wearing large plugs or rings as ornaments. Many of the figures have a very pronounced "goatee" beard, though no other facial hair is indicated. Many also are represented as greatly emaciated, the ribs and vertebral column being strongly indicated, the abdomen deeply sunken, and the orbits of the eyes hollow and with prominent lower margins. It is clear that the actual native type is not here represented and that a conventional rendering has been arrived at, just as in the Marquisas group, Hawaiian Islands and many other Pacific groups one finds local schools of art producing their own fanciful anthropomorphic types. The markedly aquiline nose reminds one of a Papuan type in New Guinea, rather than of a Polynesian or Melanesian type; but since the nasal convexity appears, as far as I can see without further reference, to be especially exaggerated in the *emaciated* figures, it is just possible that it may originally have been

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suggested by the retrocession of the cartilaginous extremity of the nose, due to shrinkage of the tissues either *post mortem* or as a result of hunger-emaciation. If this be so, this feature would be pathological rather than normal and to be accounted for on other than ethnological lines. These emaciated figures call to mind certain rude carvings in wood or pumice-stone from the Chatham Islands, in which the ribs and backbone are very strongly indicated.[1] The same peculiarity appears in some of the tree carvings in the same islands, representing skeleton-like figures cut in the bark of the *kopi* or *karaka* tree, as described by Dr. A. Denby,[2] who supports the theory of an early Melanesian occupation of the Chatham Islands.

The prominent brow-ridges seem to suggest a Melanesian or a Papuan type, while the elongated ear-lobes are decidedly Melanesian, the practice of distending the lobes with large disks or rings being, in the Pacific, specially associated with the Melanesian area and but rarely seen in Polynesia. In the Marquisas group, it is true, this practice obtains as a prominent feature, but here too it is linked with other unmistakably Melanesian culture-elements. In the picture of a typical Easter Islander published in *De Reis van Mr. Jacob Roggeveen* (Mulert edition, 1911), the man appears wearing a "goatee" beard without other facial hair, and it is possible that a native fashion may be indicated in the beards of the wooden figures. But the beard in this photograph is far less crisply defined than are the "imperials" of the carvings, and it may be that this feature may have been suggested by some of the early European voyagers, who were looked upon as gods and may have been perpetuated as such in sculpture. That portraiture was to some extent practised in connection with these wooden figures is borne out by a small example

[1] Cf. Partington's *Album of the Pacific*, iii. pl. 223, fig. 1. Also a specimen in the Pitt Rivers Museum at Oxford.

[2] *T.N.Z. Inst.* 1901, xxxiv. p. 130, and pl. v.

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given by George Griffiths in 1859 to the Ashmolean Museum, and now in the Pitt Rivers Museum. This was stated to be a portrait of Captain Cook. This example, as one would expect, has no beard and the ears are represented of the normal shape, in contrast with the greatly distended ears which usually prevail in these figures. It is always possible that this latter Melanesian attribute may have been grafted upon features suggested by a different people. There were "long-eared" people still living upon Easter Island at the time of its discovery by Roggeveen in 1722, and also when Captain Cook visited the island in 1774, though whether these were the remnant of a Melanesian stock or Polynesians who had adopted from Melanesians the practice of distending the ear-lobe, is not clear. The native traditional history leads us to suppose that when the "short-eared" Polynesians arrived, they found the island already inhabited by a "long-eared" people (presumably of Melanesian origin), who were almost or quite exterminated by the new-comers.

Another noteworthy feature of the wooden statuettes of Easter Island is the mouth. In most of the sculptures the lips are straight and thin; in others, especially the emaciated ones, the mouth is almost dumb-bell shaped, recalling a type very prevalent in the conventional carvings of the Hawaiian Islands and New Zealand.

III. *The monolithic statues.* Perhaps the most striking feature in Easter Island culture is the very numerous huge monolithic effigies, hewn from the solid volcanic rock in the crater of Rano Roraku and erected often upon stone platforms or terraces, *ahu*, in various parts of the island. These have received special attention from Mr. and Mrs. Routledge, and will no doubt be fully described by them. Suffice it for me to draw attention to certain special points in regard to them, which have a bearing upon the suggestion which I wish to offer. In facial form they differ from any normal native type either Polynesian or Melanesian, nor

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DESCRIPTION OF ILLUSTRATIONS.

FIG. 1. *Mataa*, obsidian blade of typical specialized form, with tang, Easter Island. Pitt Rivers Museum. Length, 11.3 *cm.*

FIG. 2. Monolithic statue. Easter Island. The dotted line at *A* indicates the height reached by the top of the head of a man on horseback, standing beside the statue in the original photograph published in the *Illustrated London News*, 25th March, 1911.

FIG. 3. Head of one of the monolithic statues, showing the perforated and distended ear-lobe. Easter Island. From photograph taken by Mr. Routledge.

FIG. 3*a*. Ear of one of the monolithic statues, showing perforation and exaggerated distension of the lobe. Easter Island. From photograph taken by Mr. Routledge.

FIG. 4. "Canoe-prow god," of wood inlaid with pearl-shell. Solomon Islands. Pitt Rivers Museum. Height, 18 *cm.*

FIG. 5. "Canoe-prow god," of wood with eyes of pearl-shell. Solomon Islands. H. A. Tufnell collection; Pitt Rivers Museum. Height, 19.6 *cm.*

FIG. 6. One end of carved wooden bowl representing a Frigate-bird. Solomon Islands. H. A. Tufnell collection; Pitt Rivers Museum.

FIG. 7. Design of Frigate-bird with human arm and hand, in low relief, black on a light ground, on blade of a paddle. Solomon Islands. Pitt Rivers Museum. Width of design, 16.5 *cm.*

FIG. 8. Canoe-ornament of wood in form of a bird with a human head. Mungeri district, New Georgia, Solomon Islands. B. T. Somerville collection; Pitt Rivers Museum. Length, 15.2 *cm.*

FIG. 9. Fishing-net float of wood in form of *Kesoko*, with human body and Frigate-bird's head. Same data as the last. Height, 18 *cm.*

FIG. 10. Canoe-charm of wood in form of a Frigate-bird. Rubiana Island, Solomon Islands. British Museum.

FIG. 11. Ditto, with human head on the bird's body. Same data as the last.

FIG. 12. Wooden fishing-net float, carved with human head on bird's body. Mungeri district, New Georgia, Solomon Islands. B. T. Somerville collection; Pitt Rivers Museum. Length, 20.5 *cm.*

FIG. 13. Ditto, showing the head more conventionalized. Same data as the last. Length, 17.2 *cm.*

FIG. 14. Wooden cup with pedestal in human form. Solomon Islands. Pitt Rivers Museum. Height, 30 *cm.*

FIG. 15. Two figures of Terns (?) roughly engraved upon a small boulder. Easter Island. Height, about 10 *cm.*

FIG. 16. Bird-headed human figure, scupltured in relief on a rock at Orongo, Easter Island. From a photograph by Mr. Routledge.

FIG. 17. Similar figure carrying the sacred egg of the *Manu tara*, sculptured in relief on rock at Orongo, Easter Island. From specimen collected by Mr. Routledge. British Museum. Length of figure, 36.5 *cm.*

FIG. 18. Painting in red and black upon stone slab, representing seated human figure with Frigate-bird's head. Orongo, Easter Island. Height of original about 63 *cm.*

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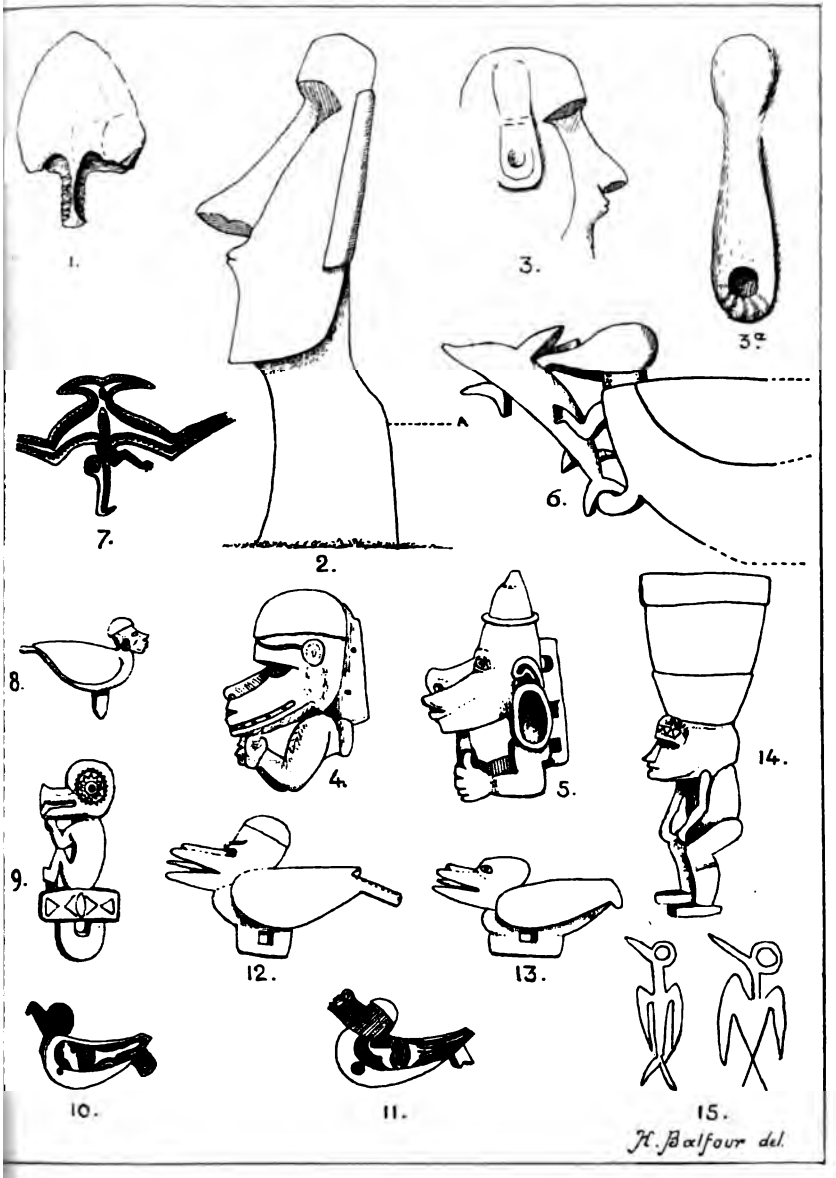
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H. Balfour del.

FIG. 19. Ideograph of Frigate-bird in attitude of flight. Easter Island script tablet.

FIG. 19*a*. Figure of flying Frigate-bird cut upon a bamboo fishing-scoop. New Georgia (N. coast), Solomon Islands. B. T. Somerville collection ; Pitt Rivers Museum. Width of figure, 6.5 *cm.*

FIG. 20. Ideograph of bird in profile. Easter Island script.

FIG. 20*a*. Design of Frigate-bird in flight, profile view. Same data as Fig. 19*a*. Length of figure, 5.8 *cm.*

FIG. 21. Ideograph representing double-headed Frigate-bird. Easter Island script.

FIG. 21*a*. Ornamental pendant of pearl-shell, representing a double-headed Frigate-bird. Engraved on the surface is a design of the Frigate-bird, resembling Fig. 19*a*. Vaholi, New Georgia, Solomon Islands. B. T. Somerville collection ; Pitt Rivers Museum. Width, 11.2 *cm.*

FIG. 22. Ideograph of Frigate-bird, with one normal wing and the other transformed into a human arm holding up a fish. Easter Island script.

FIG. 22*a*. Similar design of semi-human Frigate-bird, with one normal wing and one human arm and hand holding a fish. Cut upon a dancing paddle. Solomon Islands. Pitt Rivers Museum. Height of design, 7.4 *cm.*

FIG. 23. Ideograph of prognathous human figure, seated with hand raised. Easter Island script.

FIG. 23*a*. Figure of *Kesoko*, in similar attitude and with head of Frigate-bird (compare Fig. 9). Solomon Islands. Same data as Fig. 19*a*. Height of design, 2.5 *cm.*

FIGS. 24 to 33. Ideographs representing bird-human figures in which the attributes of the Frigate-bird are variously combined with the human attributes. Easter Island script.

FIG. 24. Bird with human arms and hands.
FIG. 25. Human form with bird's head.
FIG. 26. Head and wings of the bird combined with human legs.
FIG. 27. Bird with one human arm, and human figure with one wing.
FIG. 28. Bird with wings of different form, and human figure with identical unsymmetrical wings.
FIG. 29. Bird with one wing turned upwards, and human figure with identical wings.
FIG. 30. Designs similar to the last but with peculiar appendages on the up-turned wing.
FIG. 31. Bird and human figures, each with one wing and one arm holding a staff-like object.
FIG. 32. Bird and human figures, each with one wing and one arm holding up a circular object.
FIG. 33. Bird and human figures, hand in hand ; each with one wing and one arm.

FIG. 34. Ideograph of human figure, seated with legs widely spread, holding a fish.

FIG. 34*a*. Similar design of human form in the same attitude, and with fish on either side. Solomon Islands. Same data as Fig. 19*a*. The representation of the greatly distended ear-lobes explains the lateral appendages appearing on the heads of so many human figures in the Easter Island script.

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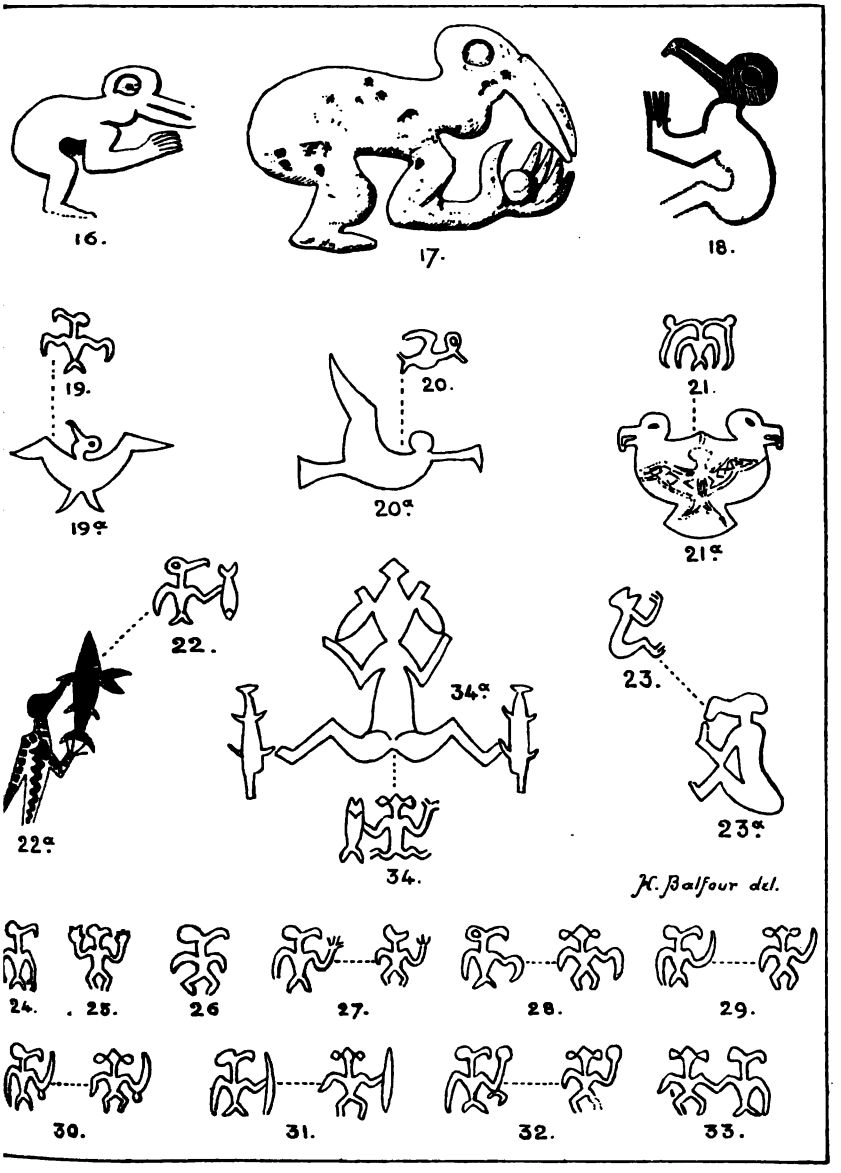
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do they bear resemblance to Polynesian representation of the human form whether realistic or conventional (Figs. 2 and 3). In order to find possible affinities, we must, I think, seek them outside the Polynesian area. Certain well-marked and prevalent peculiarities may be noted as characteristic of these remarkable statues (Figs. 2 and 3): (1) the prominent, overhanging brow; (2) the absence of any indication of the eyes, which are sufficiently suggested by the hard, dark shadows cast by the overhanging brow-ridges; (3) the very long, concave nose (differing markedly from the arched noses of the wooden figures); (4) the protruding or "pouting" lips; (5) the prominent, pointed chin; (6) the greatly distended ear-lobes (Fig. 3*a*); and, lastly, (7) the cylindrical so-called "hats" or "crowns" of red volcanic tufa, which originally surmounted the heads of many of the statues.

Now, there is only one region in the Pacific in which I have been able to find representations of human form in which the above-mentioned characteristics appear associated together in such a manner as to suggest an affinity with the Easter Island statues, and this is the Solomon Island group in the Melanesian area.

Some years ago I made a study of the so-called "canoe-prow gods" and other representations of human form from New Georgia, San Cristoval and other parts of the Solomon Islands [1] (Figs. 4 and 5). My then object was to account, if possible, for the very excessive prognathism which is so pronounced a conventional feature of these figures. The slight prognathic tendency of the native type is not sufficient to explain this grotesque exaggeration. I discovered an apparent solution in the influence of another totally distinct design, that of the Frigate-bird, the explanation being that the conventional result was arrived at by hybridization of two designs. The human form and the frigate-bird are very constantly associated together in close

[1] *Man*, June, 1905, No. 50, and pl. F.

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juxtaposition in the art of the Solomon Islands, and are moreover closely related by the fact that the frigate-bird, *Daula*, is the central figure of a wide-spread Melanesian bird-cult. It is a kind of super-bird possessed of a *tindalo*, or spirit, endowing it with human or superhuman powers. In representations of the frigate-bird we frequently see human attributes grafted upon the bird figure. For instance, in the carved wooden Solomon Island bowl (Fig. 6) representing a frigate-bird holding a large fish, a pair of human arms and hands are seen issuing from the bird's breast just below the neck and grasping the body of the fish.

Similarly, in a figure of the same bird with outstretched wings, represented upon the blade of a canoe-paddle (Fig. 7), an unmistakably human arm is shown arising from a kind of shoulder, in defiance of anatomical difficulties. Even bracelets are indicated upon this arm.

Again, composite forms in which the bird- and human-form are variously combined are seen in numerous instances of figures having the body of a bird combined with human head (Fig. 8), or, conversely, human body with bird's head (Fig. 9). This particular figure is said to represent *Kesoko*, half man half frigate-bird; the hooked beak of this bird is well indicated. In the British Museum there are two carved canoe-charms from Rubiana which are almost identical, except for the fact that whereas in the one (Fig. 10) the bird's body is surmounted by a frigate-bird's head with the gular pouch indicated; in the other (Fig. 11) the bird's head is replaced by a semi-human head, of the type familiar in the "canoe-prow gods," showing greatly exaggerated prognathism. This beak-like protrusion of the lower facial region seems clearly to have been suggested by the form of the bird's beak which it replaces.

Two other examples of human-headed birds, in the Pitt Rivers Museum, emphasize this hybridization of bird-

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and human-form. In the one (Fig. 12) the head is still clearly recognizable as human, in spite of its very prolonged beak-like snout. In the other (Fig. 13) it is only saved from being non-human by the presence of a well-defined nose lying along the ridge of the " beak."

Without multiplying instances, I think it is fair to recognize as evident that the excessive prognathism which characterizes so many of the representations of human form in Solomon Island art, is due to fusion of bird and human *motifs*, and that the composite conventional result is intimately associated with and, indeed, a product of a cult of the frigate-bird. The cult itself, no doubt, is concerned with the problem either of securing safety at sea, or of promoting good luck in fishing, or, more probably, both.

In the paper above referred to, I carried the point further, and showed that the conventional highly prognathous type so arrived at has tended to dominate the would-be *realistic* art in the Solomon Islands. In very many of the carvings and drawings of the human head which are intended to be realistic, we can recognize to a greater or lesser extent the " canoe-prow god " type, and it would appear that the Solomon Island artists have been obsessed by this traditional modified type and that their would-be realistic renderings of the human form are largely dominated by it. One of the instances which I figured in support of this view is an actual portrait-study of one native of New Georgia by another.

To return to Easter Island. In this conventionalized rendering of the human form in the Solomon Islands, we find all the characteristics above enumerated in describing the monolithic statues of Rapanui. They are not *all* necessarily associated together in any one specimen, but they are all sufficiently frequently present in the Solomon Island figures to suggest the probability of the resemblance observable in the art-products of these two widely separated

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regions being other than merely fortuitous. The heavy, overhanging brow, the long, upward-curving nose, the protruding lips and prominent chin of the Rapanui statues all find a parallel in the figures from the Solomon Islands. The distended ear-lobe is usually very marked in the more strictly human figures from the latter group. It is true that the eyes are *nearly* always indicated in the Solomon Islands (usually by inset pieces of pearl-shell), but occasionally they are omitted and are merely suggested by the shadows cast by the overhanging brow, as, for instance, in the specimen shown in Fig. 14, which in this respect adds another point of similarity to the Easter Island statues, which are eyeless.

Lastly, in connection with these statues, I have a suggestion to make in regard to the so-called "hats," or "crowns." These, as I have already mentioned, are huge cylinders of red volcanic ash or tufa, which were placed on the tops of the heads of some of the effigies. Now, if these merely represented hats or other head-gear, it is difficult to see why the natives did not carve them out of the rock in one piece with the statues. That would have been an easy and obvious method of arriving at an adequate result where only a hat was intended. Why, then, did they take the trouble to go nearly across the island to another crater in the Teraai Hills (some 7 miles or so from Rano Roraku, where the statues themselves were hewn out), in order to employ as material for the "hats" a special kind of very *rough* rock, a vesicular *red* tufa? I wish to urge as a tentative and heterodox suggestion, that the reason was that these red cylinders were not intended to represent hats at all, but *hair*. The selection of a particularly rough, vesicular rock for such a purpose would be natural enough; but I may be asked, why should a *red* material be specially used, when the normal native hair-colour would be black or very dark.

To find an explanation of this, we may again turn to the

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Solomon Islands. In this group (though not exclusively, as the fashion is followed elsewhere, *e.g.* in Samoa) it is locally a common practice to bleach the hair by using lime, with the result that the normally dark hair acquires a light-brown, reddish or yellowish colour. In the northern islands of the group the hair is sometimes coated with red ochreous earth. Throughout the group much attention is given to hair-dressing, which forms an important occupation of daily life. Most of the carved wooden human figures from the Solomon Islands, to which I have referred, have the hair indicated of a *light* colour, sometimes by leaving the light wood unstained, sometimes by colouring the top of the head red. In the more realistic examples the hair is represented by a number of minute vegetable burrs, crowded closely together over the head, so as to give the desired effect of a rough surface, and stained a red colour. In others, again, a light brown or yellowish tow is used.

My suggestion, then, is that the cylindrical accessories which were placed upon the heads of the Rapanui statues were intended to represent the hair mass, that the natives specially selected a rough, vesicular tufaceous rock as material, in order to give the effect of hair which was not straight or but slightly waving, like the hair of Polynesians, but rather curly or frizzly, like the prevailing Melanesian hair-type. Further, that a *red* tufa was selected in order to conform with the practice, common enough in Melanesia, of bleaching the hair to a reddish colour with lime, or of coating it with red ochre. It still remains to account for the *cylindrical* shape given to these tufaceous masses. Why, if they represent hair, were they not hemispherical like the hair mass as usually represented in the wooden carvings, as is seen, for instance, in the Solomon Island figures? This shape was, I think, mainly imposed by necessity. The red tufa "crowns" were made on one spot in the island, and had to be transported often many miles to the places where were erected the statues which they

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were destined to embellish. They could not be carried, since some of them measured as much as 10 or 12 feet in diameter, and their weight ran into tons. They could only be moved by *rolling*, and for this the cylindrical form was obviously most effective, in fact imperative. On arrival at the site of the statue the "crown" appears to have been completed by slightly hollowing the base to fit the top of the head, and by cutting a boss or knob on the upper end. This boss may, possibly, represent a compromise between the *desired* rounded upper surface of the block representing hair, and the *imposed* cylindrical form, which had to be retained until the "crown" was actually in its place on the head of the statue, since, in order to get it there, it was necessary to erect in each case a long, inclined causeway up which the "crown" could be *rolled* to the requisite height.

The fact that these "crowns" were not exactly centred upon the top of the head, but were arranged to project more in front than at the back, may be due to a desire to combine with the representation of the hair mass, the effect of the forward-projecting palm-leaf eye-shade, which is so very commonly worn in Melanesia to protect the eyes from the sun's glare. These consist of broad flaps projecting over the forehead only and kept in position by a narrow band passing round the head.

An interesting point to note in connection with the probable affinity which is suggested by a comparison of the Easter Island statues with the Solomon Islands carvings, is that just as the latter are intimately connected with a sea-bird cult (frigate-bird), so too are the former also connected with elaborate ceremonial observances associated with sea-birds, to which reference must now be made.

IV. *The Bird-cult and certain rock-sculptures, paintings and engravings in Easter Island.* The ornithology of the bird-cult in Easter Island is somewhat confused by the fact that whereas, in later times at any rate, the bird,

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Manu tara, which dominated the cult was a tern (the Sooty tern, *sterna fuliginosa*, known to sailors as the "Wide-awake," or "Egg-bird") and not a frigate-bird, there is, none the less, abundant evidence that the remains or reminiscence of a cult having the frigate-bird as central figure, existed, or, should I say, persisted in Easter Island, as I hope to prove.

The Terns and the Frigate-birds are, of course, very distinct one from the other. The former are classed with the Gaviae, the latter with the Steganopodes. Both, it is true, are web-footed sea-birds, and both possess forked tails; but a point of difference which I must especially emphasize now, lies in the form of the beak. The tern's beak is nearly straight and sharply pointed, that of the frigate-bird is strongly hooked at the end of the upper mandible. I would also note the presence in the latter bird of a well-defined gular pouch, which is entirely absent in the terns.

The Sooty Tern breeds often in great colonies on rocky islands and reefs (the so-called "Wide-awake Fairs" on Ascension Islands are especially famous). One of its regular breeding-places is the small rocky island of Moto Nui, lying off the S.W. end of Easter Island close to the crater of Rano Kao. Mrs. Routledge has described the great annual ceremony which was observed by the Easter Islanders, in which the main feature was a competition to secure the first egg of the season after the arrival of the terns at their nesting site; and how the lucky winner in the race became the Bird-man of the year, enjoyed certain privileges combined with some discomfort due to his being placed under a rigid *tabu*. The sacred egg was preserved in his house until the next season.

Now, many of the rock-sculptures in relief, engravings and paintings found at Orongo on the lip of the crater of Rano Kao, are evidently connected directly with this cult. Some of the engravings clearly represent the *Manu*

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tara (Sooty tern) itself (Fig. 15), the *straight*, pointed beak and forked tail pointing to this bird. But many of the other representations equally clearly represent the frigate-bird, with *hooked* beak and forked tail, or in several instances portray an anthropomorphized bird having frigate-bird attributes. I shall refer to many of these designs later when dealing with the hieroglyphic symbols on the inscribed tablets, but I would specially draw attention here to some examples of the designs representing half-bird half-man figures, of which more than 100 were seen by Mr. and Mrs. Routledge carved in relief on the rocks at Orongo, the centre of the annual ceremony, which are believed to represent the Bird-men, or winners in the successive annual races for the sacred egg. One of the illustrations which I give (Fig. 16) represents a bird-headed human figure grotesquely rendered, and another (Fig. 17) shows a similar figure which has a special interest, inasmuch as it is represented as carrying the sacred egg in its hand. Presumably, both these designs are concerned with the cult of *Manu tara*, and the second example certainly seems to represent the Bird-man carrying his trophy. At the same time, it cannot be said that the sharp, straight beak of the tern is at all clearly indicated, the beaks are in fact thick and heavy-looking. Moreover, the suggestion (especially pronounced in Fig. 17) of a gular pouch, seems to point to contamination with older designs representing the frigate-bird. That these designs were modified from an original representing the anthropomorphized frigate-bird is practically proved by three examples collected during the visit of the German cruiser "Hyäne," which are figured by Geiseler.[1] In each instance two identical figures having human bodies and birds' heads are shown seated opposite to one another with hands joined. In two of the designs which are bas-reliefs on stone-slabs, the birds' beaks curve strongly downward at the tips, while in the third, of which I give a copy (Fig.

[1] *Øster Insel*, 1883, plates 15, 17 and 18.

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18),[1] the beaks are very decidedly *hooked* at the extremity, betraying the frigate-bird prototype clearly. These figures, according to Geiseler, represent *Make-make*, the god of the sea-bird's egg (*i.e.* of the *tern's* egg). It is remarkable, therefore, that he should be represented with the head of a frigate-bird. This mystery is, however, partly solved if we regard these representations as derived from an older cult of the frigate-bird, whose symbolism was retained even after a new cult-bird had replaced it. A comparison of Fig. 18 with Fig. 9 in my illustrations brings out the remarkable apparent fact that *Make-make*, represented in this guise, is identical with *Kesoko* of New Georgia in the Solomon Islands!

This seems to point to a recollection retained by the immigrants into Easter Island of a former cult of the frigate-bird which was practised in a region where this bird was a familiar feature, and which was gradually given up in the new environment where this bird, though probably not unknown, was certainly not abundant. The frigate-bird does not appear to breed on Easter Island; ndeed, the island offers little attraction as a nesting site to a bird which usually nests in trees. It appears probable that the older (Melanesian) cult was superseded by a new cult, of which the locally abundant sooty tern became the object. The evidence derived from comparative technology suggests very forcibly that the Melanesian area, and more particularly the Solomon Islands group, was the original home of the prototype of the frigate-bird cult which became decadent and finally obsolete after immigration into Easter Island.

V. *The script engraved on wooden tablets.* The most remarkable and puzzling element in the art of the Easter Islanders is undoubtedly the elaborate form of ideographic "boustrophedon" script, which has proved so insoluble an ethnological enigma. The inscribed tablets are too well known to need general description here, and many repro-

[1] One only of the paired figures is represented here.

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ductions of them are accessible. In spite of numerous attempts to decipher the ideographic pictographs, the efforts have as yet been almost unavailing. No other similar form of script is known from the Pacific Islands, unless we admit some analogy in the hieroglyphs of the Chatham Islands, referred to by Dr. H. O. Forbes,[1] or in the geographically still more remote script described by Mr. J. M. Brown [2] from the island of Uleai in the Western Caroline Islands. This latter script is syllabic, whereas that of Easter Island is ideographic, and, moreover, the signs employed in the former do not suggest any near relationship to the latter.

My object now is to call attention to the fact that many of the ideographic signs in the Rapanuian script find striking counterparts in designs still employed in the Solomon Islands. Additional evidence is thus forthcoming of a culture-link between this Melanesian group and Easter Island. I have not had time to examine critically all the signs used in the Easter Island script, but I select a few which appear to me to be significant.

One thing is very noticeable. Of all the bird-symbols which are so very abundantly represented in the script under a variety of forms, by far the greater proportion clearly represent the *frigate-bird* (as indicated by the strongly hooked beak) and not the *Manu tara*, or sacred tern. The birds are variously depicted, some more or less realistically, others conventionally and often with human attributes, and I give the following characteristic examples, together with analogous (perhaps homologous) designs from the Solomon Islands.

FIG. 19. Pictograph of frigate-bird with outstretched wings in attitude of flight, Easter Island, for comparison with

[1] *Geographical Journal*, May, 1917, p. 346. (I have as yet had no opportunity of studying these petroglyphs.)

[2] *Man*, June, 1914, No. 43.

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FIG. 19*a*. Design of frigate-bird engraved on bamboo, from New Georgia, Solomon Islands.

FIG. 20. Pictograph of flying frigate-bird in profile, Easter Island, for comparison with

FIG. 20*a*. Similar design engraved on a lime gourd, New Georgia.

FIG. 21. Pictograph of double-headed frigate-bird, Easter Island,[1] for comparison with

FIG. 21*a*. Pearl-shell pendant in form of double-headed frigate-bird from New Georgia.

FIG. 22. Pictograph of frigate-bird depicted with one fore-limb represented as a normal wing and the other as a human arm holding up a fish, Easter Island, for comparison with

FIG. 22*a*. Design of frigate-bird similarly represented with one normal wing and the other converted into a human arm and hand holding a fish; carved on a dancing paddle from the Solomon Islands. This is, I think, a most striking instance of exact parallelism. The symbolism in the two designs must surely be identical!

From the frequency with which the frigate-bird appears in the Easter Island script, it seems probable that the script itself originated in the Melanesian area and was perfected in Easter Island while the memory of this bird and of its cult-associations still persisted. The newer bird-cult connected with the tern seems to have had but little influence upon the script.

Bird-headed human figures abound in the Easter Island script, as, for instance, Fig. 23, Pictograph of very prognathous human being, in profile, seated and with hand raised, for comparison with Fig. 23*a*. Similar design but represented with frigate-bird's head (*Kesoko*), cut upon bamboo, from Mungeri district, New Georgia (*cf.* Fig. 9). Figures 24

[1] Compare rock-sculpture figured by W. J. Thomson, *Rep. Nat. Mus.*, 1891, pl. xxiii.

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to 33 show a number of avio-human pictographs from the Easter Island tablets, in which sometimes the human attributes predominate and sometimes the avian.

Lastly, I give a striking parallel derived from figures of the human form without avian attributes. Fig. 34, Pictograph of a man seated in a peculiar, conventional manner, with legs wide apart, " spread-eagle " fashion. The hands are raised and one is holding a fish. The head is represented with lateral appendages indicating, no doubt, the largely distended ears already referred to—Easter Island ; for comparison with Fig. 34*a*, Design of human figure represented rather more realistically in an identical attitude, with wide-spread legs, upraised hands and dilated ear-lobes indicated by large lateral appendages. The figure is not shown holding up a fish as in the pictograph, but on either side of it a fish is represented. Again, I think, a very striking parallel.

Conclusion. What are we to infer from the ethnological parallels to which I have drawn attention ? Many of the coincidences revealed by a comparative study of the culture of Easter Island and of the Western Pacific, may appear to be of trivial importance if taken singly ; but many, on the other hand, are sufficiently striking in themselves, and when all are taken together, the *cumulative* effect of the evidence is far too important to be overlooked and lightly set aside. I venture to think that the following points arise from the evidence available.

(1) That the culture of Easter Island is definitely composite and exhibits traces of fusion of at least two distinct culture-stocks.

(2) That a Melanesian migration at one time, or intermittently, ranged eastwards over the Pacific, and that these people reached Rapanui, amongst other islands, and took root there. That typical elements of Melanesian culture were thus introduced into the island, including the practice of distending the ear-lobe, characteristic

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style in art, certain types of implements, and the well-established cult of the frigate-bird, which was probably connected with rites aiming at increasing the fish-supply.

(3) That at a later time, a wave of Polynesian immigrants arrived and eventually conquered, partly exterminated and partly absorbed the "long-eared" Melanesians, though they retained, and continued to perpetuate in their art, many of the features of Melanesian culture.

(4) That in the new environment a new bird-cult, aiming at promoting another important source of food-supply (*viz.* birds and bird's eggs), was initiated and gradually supplanted the older cult. This new cult may have been started and developed either by the Melanesians, who no longer found the frigate-bird a dominant feature in their new surroundings, and who may thus have been led to adopt the sooty tern, which was locally very prominent and abundant and afforded a valuable supply of food—or, possibly, it may have been initiated by the Polynesian invaders. Anyway, the cult of the Sooty tern, while practically ousting the cult of the Frigate-bird, did not entirely obliterate the latter, of which very many traces persisted in the art of the island, in the *motifs* expressed in sculpture, engraving and painting, and particularly in the ideographic script. It is possible, even, in view of the great importance of the fish-supply, that the frigate-bird may have been long retained in high esteem, and that its cult persisted concurrently with that of the tern.

(5) That, in seeking in the Melanesian area for possible clues to the origin of certain non-Polynesian elements in the culture of Easter Island, the group of islands which has special claim to consideration and further investigation, is that of the Solomon Islands. Amongst other things, it seems likely that the symbolism of many of the ideographic signs employed in the Easter Island script, may be explained by a study on the spot of the closely similar designs still

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used in the Solomon Islands, the symbolic significance of which might be ascertained before it is too late.

Certain affinities suggested by the implements and art, etc., of the Chatham Islands, of New Zealand and of British New Guinea, also merit attention and call for further research. I have already referred to certain points of resemblance, and I would suggest further that a comparative study of the *manaia* design in New Zealand art, might lead to an elucidation of certain conventional signs frequently occurring in the Easter Island script. The problem of Easter Island seems to involve incidentally a fresh discussion upon the possible or probable Melanesian element in New Zealand and the Chatham Islands. That well-defined traces of this non-Polynesian element are to be distinguished in the culture of these islands, has been questioned by several able observers, but to others, with whom I find myself in agreement, it is difficult to explain certain " Maori " and " Moriori " culture-phenomena unless we recognize that there has been influence from Melanesia.

As to the spread of Melanesianism, if I may use the term, over the Polynesian area, much might be said, but space does not admit of my entering upon so wide a subject. I will merely recall Mr. Basil Thomson's statement that in the Island of Niue he found evidence of Melanesian and Polynesian admixture, and also refer to the fact that in the far-easterly and very-Polynesian Marquisas Islands, there is very striking evidence pointing unmistakably to culture-contact with the Melanesian area.

I may conclude my remarks with a reference to another source of evidence which testifies to the presence of a Melanesian element in Easter Island, and which bears out not only the technological evidence which I have offered, but also the native traditions. I cannot do better than quote a passage from some remarks made by Mr. T. A. Joyce during the discussion of Mrs. Routledge's paper on Easter Island read before the Royal Geographical

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Society on 20th November, 1916. He said,[1] "There is just one other point which adds to the problems of the island. A few years ago, when Lord Crawford made his voyage, he brought back a lot of skulls which were deposited in the Natural History Museum, whither I went to measure them. I then wrote a paper which I never published; it remained both literally and metaphorically a skeleton in my anthropological cupboard. because I could not get away from the conclusion that in their measurements and general appearance these skulls were far more Melanesian than Polynesian. And I do not think I should have been bold enough to say this now if it had not been that quite recently Mr. Pycraft has been going over the material and studying the matter, and he, without knowing anything of my results, which I had carefully hidden, came to the same conclusion." I believe that Dr. Keith has quite recently arrived at a similar opinion after examining the physical characters of the osteological remains of Easter Islanders.

Dr. Hamy, some thirty years ago, suggested a Papuan affinity for skulls found in Easter Island, which were said to differ in no essential feature from those obtained in New Guinea.

The theory of a strong Melanesian element in Easter Island is, therefore, supported by native traditional history, by the arts, industries and cults of the natives, and, lastly, by the physical characters of the islanders.

It is greatly to be hoped that under the fresh impulse afforded by the results of the Routledge expedition, the whole time-honoured problem of Easter Island may be reopened for discussion, and it is with much pleasure that I contribute these notes, sketchy and imperfect though they be. Not only is the problem one of the highest ethnological interest, but its attempted solution with the aid of material and information so zealously collected by

[1] *Geographical Journal*, xlix. p. 342.

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Mr. and Mrs. Routledge, is the most effective return which can be made to them for their highly meritorious and successful undertaking.

HENRY BALFOUR.

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THE KILLING OF THE KHAZAR KINGS.

BY SIR J. G. FRAZER.

At a certain stage of social evolution not a few races appear to have been in the habit of putting their kings to death, either at the end of a fixed term, or on the failure of the king's health and strength, or simply whenever a great public calamity, such as drought or famine, had befallen the country. Among the peoples who have practised this remarkable system of limited monarchy, and have elevated regicide to the dignity of a public institution, must seemingly be numbered the Khazars or Khozars, a nation of south-eastern Russia, who in the Middle Ages maintained their independence for many centuries alike against Persia and the Byzantine Empire, carried on a busy trade between the east and the west, and repelled the wave of Mohammedan conquest, which, but for their resistance, might have deluged Europe from the south-east. It is hardly too much to say that during those dark ages when the power of Christendom sank to its lowest ebb, and the power of Islam rose to its highest pitch, Europe was protected against the swelling tide of Moslem aggression by three great mountain barriers, the Caucasus on the south-east, the Balkans in the centre, and the Pyrenees on the south-west; and that the passes which led over these ranges into the heart of the continent were guarded by three peoples, the Khazars, the Byzantine Greeks, and the Spaniards. Of these three redoubtable champions of Christendom, the Khazars have long dis-

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The Use of the Roman Character for Oriental Languages

BY

R. GRANT BROWN, I.C.S.

[*From the* JOURNAL OF THE ROYAL ASIATIC SOCIETY, *July*, 1912.]

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THE USE OF THE ROMAN CHARACTER FOR ORIENTAL LANGUAGES

By R. GRANT BROWN, I.C.S.

"And here we must enter our protest, we fear an unavailing one, against the supineness which suffers those invaluable monuments, the unwritten languages of the earth, to perish with a rapidity yearly increasing, without one rational and well-directed effort to save them in the only mode in which it can be done effectually, viz., by reducing them to writing *according to their exact native pronunciation* through the medium of a thoroughly well-considered and digested phonetic alphabet. About sixty well chosen, easily written, and *unequivocal* characters, completely exemplified in their use by passages from good writers in the principal European and Eastern languages, would satisfy every want, without going into impracticable niceties; and we earnestly recommend the construction and promulgation of a manual of this kind for the use of travellers, voyagers, and colonists, as a matter of pressing urgency, to the consideration of philologists, ethnologists, and geographers, in their respective societies assembled."—*Edinburgh Review*, 1848, p. 226.

THE Roman character may be used for Oriental languages in two ways: first, to represent in writing the sounds of a spoken language; and secondly, to represent the characters of a written language by another set of characters. The first process is usually called phonetic writing, the second transliteration. The second process includes the first. As this may not be clear at first sight I will endeavour to explain what transliteration is.

In the languages which can be transliterated written characters are simply phonetic symbols. They have no meaning except with reference to the sounds which they represent. Chinese is largely written by means of symbols representing not sounds but ideas. Chinese, therefore, cannot be transliterated. All we can do is to choose some spoken word which represents the idea of the written character, and visualize that word by means of phonetic symbols. But most Oriental languages are written

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phonetically: that is, the characters represent not ideas but sounds.

Transliteration may be understood to mean any one of three distinct processes. One of these is not what I should call transliteration, but as the word is used to describe it in a Government publication (*Tables for the Transliteration of Burmese into English*, ed. 1907) it must at least be noticed. It is the representation in Roman characters of the present standard pronunciation of a word written in other characters, such as the Burmese, without regard to the pronunciation of each individual character. For instance, the symbol သ is pronounced much like the French *sa*, but if ်, the symbol for *k*, be added the resultant သ် is pronounced, not *sak*, but *set*, nearly as in English: and the word is written *set* accordingly.

The second process may be called direct transliteration. In this the proper sound of each character is first decided on; a symbol is chosen to represent that sound; and the character is thereafter always represented by that symbol, without regard to the actual pronunciation of the word. For instance, သ် might be transliterated *sak*. If in any language there were a separate character, and only one, for each sound, and if the sound of that character never varied, transliteration would be a simple matter. It would only be necessary to see that the script into which the transliteration is made also has a separate symbol for each sound, and there would be no difference between transliteration and phonetic writing. As a matter of fact such a language does not exist, either because all the languages we know use alphabets more or less imperfectly adapted to their sound-system, or because the alphabet has failed to keep pace with the sound-changes in the language. Sanskrit is nearly such a language: its transliteration is therefore comparatively easy. Burmese is an instance of

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the other extreme. It began by importing, with clumsy adaptation, an alphabet belonging to another sound-system; it has since undergone great changes in pronunciation, and these changes have not been uniform, but are the result of a multiplicity of tendencies. Its transliteration, therefore, is so hopeless a task that, as we have seen, the Government of Burma has not attempted it, and has substituted phonetic writing. Between these extremes there are many degrees. But transliteration of a modern language always presents difficulties which do not exist in mere phonetic writing.[1] It is, moreover, only necessary for certain limited purposes.

The third process may be called indirect transliteration. This has to be resorted to, to take an extreme case, for a text which is written with a modified form of a known alphabet, but in an unknown language. Each character is first identified with the corresponding character in some language of which the pronunciation is known; and the sound given to it in that language is then assigned to it and represented by phonetic writing. For instance, in his article on "The Fourth Text of the Myazedi Inscriptions", published in the Journal of this Society for April, 1911, Mr. Blagden has taken a text in an unknown language, identified each character used in it with a Sanskrit character, and represented, more or less, the Sanskrit sound of that character in a phonetic script. The same process may be used, and is used, for an ancient text in a known language of which the former pronunciation is uncertain, such as Burmese or Talaing. For instance, in transliterating the text of the Myazedi inscription Mr. Blagden has used *ca*, not *sa*, to represent the sound of the character

[1] I hope to show elsewhere that the supposed obstacles to the use of phonetic spelling, as against transliteration, for educational and popular purposes have little or no existence in fact, or are easily surmounted; but the matter does not come within the scope of this article, nor is it of any particular interest to the ethnographists and others who are now being addressed.

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ꝺ. That is because this character is clearly another form of the Sanskrit character च, the pronunciation of which, at the time of the Sanskrit grammarians, is believed to have been *ca*.[1] The word ꝺꝋʃ would be transliterated by Mr. Blagden *cak*, and pronounced 'cʌk',[2] the sound *a* becoming 'ʌ' in Sanskrit when followed by a final consonant. If such a text contains a character which has nothing corresponding to it in Sanskrit, this method of transliteration cannot, so far as that character is concerned, be used. The character itself may be copied, or some non-phonetic symbol, such as a number, may be employed; but the process is then, of course, not transliteration.

The object of these introductory remarks is to show that all transliteration involves a system of phonetic writing, a fact not always recognized; and to clear the ground of some vexed questions which have been unnecessarily confounded with that of the choice of a phonetic script, and have thus obscured the issues in many previous discussions. I propose now to leave all these questions aside, and to discuss only the choice of a phonetic script.

It is not necessary to devise a new system of phonetic writing for each language. The same system can be used for all languages, whether written or unwritten, so far as they have sounds in common. If a language has sounds peculiar to itself special symbols must, of course, be invented to represent those sounds. This, however, happens to a much smaller extent than is usually supposed. There are comparatively few spoken sounds in the world which do not exist in one or other of the principal European languages. It is obviously convenient that

[1] The *c* represents a single palatal sound, approaching that in the English *church*, and perhaps identical with the Magyar sound for which the International Phonetic Association also use the symbol *c*.

[2] Something like the English *chuck*.

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one general system should be followed which, subject to these slight additions, is applicable to all languages.

I now suggest to you that the following qualifications are needed for any general system of phonetic writing.

1. It should be based on the Roman alphabet. This hardly needs demonstration.

2. It should be on the principle of "one sound, one symbol". That is to say, a different symbol must be employed for every distinct sound, so that there can never be any doubt as to what sound is meant. Moreover, a single sound should be represented by a single symbol, not by a combination of letters. For instance, the word *thaw* contains only two sounds, and should therefore be represented by only two letters, not by four.

3. It must be acceptable to civilized peoples generally, and should not therefore follow conventions merely because they are found in some particular European language. For instance, the letter *i* must not be used to represent the sound *ai* in *aisle*.

4. It should if possible be devised so that it can be used for any language, not merely for a particular group of languages. A new language may in exceptional cases have sounds peculiar to itself. In that case it may be necessary in recording it to make use of diacrital marks or new symbols. But this will rarely happen, and where it does it will be all the more necessary to use symbols already known for sounds already known.

5. The script should be such that it can be read easily and rapidly when once mastered, without unduly straining the eyes.

6. The system should be an elastic one. There should be a simple script for general purposes which is capable of being converted, by the mere addition of diacritical marks, into an accurate one for scientific purposes. In the script intended for general purposes diacritical marks should be avoided as much as possible, not only for the sake

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of simplicity, but because they should be held in reserve for use when greater accuracy is needed. It follows from both this and the last principle that, where ordinary characters are inadequate for general purposes, special characters and not ordinary characters with diacritical marks should, as a rule, be used.

7. Economy in printing has to be considered. As to this it must be remembered that an ordinary type with a special diacritical mark attached to it is just as expensive as a special type. Both have to be specially cut.

8. In choosing a system for recording Oriental languages it would, of course, be a great advantage if one can be found which is already widely used in Europe for other purposes, and which is approved by leading phoneticians. It is useless suggesting a system unless it is likely to be generally adopted, at least in essentials.

9. It would also be a great advantage to have some body of phonetic experts to whom a reference could be made in case of doubt as to the best way to represent unfamiliar sounds, and who could give an authoritative decision on the point raised. It must be remembered that linguists are not always phonetic experts.

Now let us see how far the systems now used by Orientalists fulfil these requirements. In 1894, at a congress of Orientalists held at Geneva, the transliteration of Oriental languages was discussed. The congress decided to confine itself to Arabic and Sanskrit, languages which are, of course, of first-rate importance, but which represent only two out of many Asiatic families, and which happen to have an unusually simple system of vowel-sounds. On an attempt being made to apply the phonetic script prescribed by the congress to Mongolian languages, which are comparatively rich in vowel-sounds, it was found quite inadequate. This is patent to anyone who will study Dr. Grierson's great work, the Linguistic Survey of India. The survey relates mainly to Aryan

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languages, but includes some others, and for these Dr. Grierson has been obliged to invent new symbols. As far as possible he has applied his system to all the languages dealt with, but in some cases the contributor has used a system of his own and has failed to explain adequately what sounds are intended by the symbols used by him. These symbols have perforce been allowed to stand, with a result which is so far unsatisfactory.

The Geneva system, therefore, does not meet the fourth or the sixth of our requirements. Still less does it fulfil the eighth, as it is not used for any other purposes at all; or the ninth, as there is no machinery for referring new or doubtful sounds to a body of phonetic experts.

Many other systems of writing are in use for Oriental languages. In fact, nearly every person who records a new language uses his own system for it, with the result that in many cases his readers cannot tell what sounds are meant. The ordinary man has not sufficient knowledge of the sounds of his own language to be able to give useful examples in it.

There are some schemes, however, which call for special notice. One is that explained by the Rev. Father Schmidt in *Anthropos* for 1907. As might be expected in so distinguished a philologist, it is scientifically constructed and fulfils the first four of our requirements. But it altogether fails to satisfy the other five. Father Schmidt is strongly opposed to special characters, and uses the ordinary Roman alphabet with an elaborate system of diacritical marks, which must be difficult to read even after long practice. I need only mention here his symbol for the vowel-sound in *not*. This consists of the letter *a* with two lines and a dot underneath it. The symbol for the first vowel-sound in *air* is *a* with three dots under it. And if the diacritical marks are dispensed with we have, including the vowel-sound in *far*, three very different sounds all represented by the same symbol.

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The system of the Rev. Mr. Knowles is specially devised for certain Indian languages, the Tibeto-Mongolian group being excluded. If Father Schmidt dislikes special characters, Mr. Knowles goes to the other extreme. For those languages alone he uses no less than thirty-two, in addition to the ordinary Roman characters. Of these, however, seven are for the peculiar Indian cerebrals, for which it is usual to employ diacritical marks, while others are needed only for transliteration, not for a phonetic representation of the spoken language. There is much to be said for the system, but it hardly meets the fourth of our requirements, and certainly fails to meet the last two.

A system of quite a different class is that of the Royal Geographical Society, which may be called national as distinguished from international, and does not, of course, hold the third of the qualifications needed. It is a rough scheme intended to prevent geographical names from being grossly mispronounced by English readers of maps, and on the whole serves its purpose very well, though it might easily be improved. Its main principles are that the vowels are pronounced as in Italian unless followed by a double consonant, when they are given the values of the English short vowels; that the consonants are pronounced as in English; and that the fricatives, such as appear in *shoe*, *treasure*, *church*, *thin*, *khan*, and *ghazi*, are represented conventionally as in English by *h* following another letter. This is nearly the system prescribed by the Government of Burma for Burmese, the distinction between aspirated and unaspirated letters (in the true sense) being ignored. This system is, of course, unsuitable for scientific purposes, but the Society has done much towards getting English people to use the Roman vowel-symbols with their Continental values. No one now thinks of writing the name of the Fiji Isles "Feejee", or (I should hope) of reading the name as "Faijai" when he sees it in print.

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What is usually called the Hunterian system, because it was used by Sir William Hunter for his *Imperial Gazetteer*, is also, in the main, a combination of Italian vowels and English consonants. Though it deals only with a very simple vowel-system, and cannot therefore be applied to such languages as Burmese, it uses a diacritical mark for the Italian *a*, and employs the plain letter *a* for the vowel-sound in *but*: an arrangement which commends itself neither to phoneticians nor to the public. It fails to satisfy the second, third, fourth, sixth, eighth, and ninth of our requirements.

The phonetic representation of Chinese, whether for scientific or for popular purposes, is even less satisfactory, the difficulties being considerably greater. The Wade system is commonly followed, though it is admitted on all sides to be unsatisfactory. It employs the fantastic combination *érh* to represent a single sound common in certain dialects of English, and, while using a diacritical mark for the first vowel in Ssŭch'uan, also doubles the *s* "to fix the attention on the peculiar vowel *ŭ*". It does not satisfy a single one of our requirements except the first and fifth, for it cannot be said to be economical when it uses special types with so poor a result. The truth is that it is impossible for anyone, however distinguished he may be as a Chinese scholar, to devise a satisfactory system for Chinese without a knowledge of phonetics.

Probably few people realize how very poor the Roman alphabet is in vowel-symbols. There are, of course, five symbols, which we call *a*, *e*, *i*, *o*, and *u*. Against these the English language has at least twelve distinct pure vowel-sounds, besides three used only in diphthongs; French has sixteen, including four nasals; German eighteen, including the same nasals; Swedish fourteen; and so on. Among Mongolian languages that most widely spoken in the British Empire, Burmese, has about a dozen vowel-sounds.

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The Canton dialect of Chinese has about the same. The Naga and some other Tibeto-Burman languages have some vowel-sounds which do not appear in either of these.

Some of these sounds are no doubt but slight, though significant, variations from the sounds[1] *a, e, i, o, u* which the symbols we call *a, e, i, o, u* are usually taken to represent. Where this is the case there is something to be said for the use of diacritical marks with the existing symbols. But other sounds are altogether distinct from any of these. Such are the pure vowel-sounds in the English *pat, paw, sir,* and *but,* and the French *pu,* all of which occur in Mongolian languages. None of these can properly be treated as mere modifications of the sounds[1] *a, e, i, o, u.* They are cardinal points, just as the sounds[1] *a, e, i, o, u* are. Some of them have their own modifications. For instance, the vowel-sound in *pot* may fairly be treated as a modification of that in *paw,* and the first sound in *amiss* as a modification of that in *sir.* If diacritical marks are used for the cardinal vowels you have to use further marks for these modifications, and more again for nasalization and length. The inconvenience of piling diacritical marks one on the top of another is obvious. The only remedy is to have special symbols.

Until lately special symbols have been very little used. They are employed, however, in Anglo-Saxon and modern Icelandic to distinguish the *th* in *this* from the *th* in *thin,* and the same symbols can of course be used to distinguish both from the totally different sound of *th* in the Hindustani *tha.* At first sight they appear strange, stranger than ordinary types with diacritical marks: but this is really not a serious objection. It does not require much intelligence to learn their meaning, and once they are learnt they are much easier to use and to recognize than ordinary letters with diacritical marks are.

[1] As in Italian.

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It will perhaps hardly be believed that there is a in existence which fulfils all the requirements mentioned. Such a system, however, there is. It has existed for twenty-five years, and has stood the test of experience, though it has never until very recently been applied to Oriental languages. It is in order to introduce this system to the readers of the Journal that this paper is written. It is the system of the International Phonetic Association.

The Association was founded in 1886 by a group of French professors, who had successfully used a phonetic script in teaching the pronunciation of English. Its system has been accepted in essentials by most of the leading phoneticians of Europe. Its Honorary President is our own Dr. Sweet, Reader in Phonetics at Oxford; its President, Professor Viëtor of Marburg; its Vice-Presidents, Professor Jespersen of Copenhagen and Dr. Edwards, one of His Majesty's Inspectors of Schools. Its Secretary in England is Mr. Daniel Jones, Lecturer on Phonetics at University College, London. Its aims and principles are explained in a pamphlet issued in French in 1898. A new pamphlet is about to be published in English, and will contain texts of Oriental languages in the Association's character. The script is used in at least four pronouncing dictionaries, and in several hundred textbooks and grammars. The special types are stocked by the Oxford, Cambridge, and London University Presses, by Messrs. Turnbull & Spears of Edinburgh, and by no less than four firms at Leipzig and one at Copenhagen.

Though formerly better known on the Continent, the science of phonetics has been made a compulsory subject in all training colleges in Scotland, and is advancing rapidly in England. In both countries the Association's system is very widely used.[1] Nearly all the universities

[1] See *The Means of Training in Phonetics available for Modern Language Teachers*, by L. H. Althaus, 1911.

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and colleges in which phonetics are taught use that system, while most of the rest use a script invented by Sweet, which differs in some details, but can be read with ease by anyone who has learnt the Association's method.

I strongly advocate the use of the system for recording for scientific purposes languages not hitherto put into writing. But it has other and important uses. In the first place no better script can be devised for the use of tribes which have as yet invented no system of writing. The Roman alphabet has, in fact, been used with success among the Chins of Burma, who have no written language. The symbols which seem strange to us are, of course, no stranger to them than our ordinary alphabet; and it is easier to teach them a few extra symbols than, let us say, to make them remember when the letter *a* is pronounced 'ɑ' as in *father*, 'ei' as in *ache*, 'è' as in *many*, 'æ' as in *pat*, 'ɔ' as in *all*, 'ɔ̀' as in *what*, or 'ə' as in *amiss*; or when the sound 'ɑ' is spelt with the letter *r*, or with the letter *a*, or with an *a* and an *h*, or with an *a* and an *r*, or with an *a* and two *r*'s, or with an *a*, an *r*, and an *e*.

Even when the language has a written character of its own the script is of the greatest use, not only for dictionaries, but for teaching the language. Modern languages are being more and more taught with the aid of a phonetic script, without which it is almost impossible for the ordinary learner to acquire the correct pronunciation. It is gradually being recognized that accuracy of pronunciation is as much a test of good scholarship as a copious vocabulary or freedom from grammatical error. And the script can be used, not merely for teaching Europeans to speak an Oriental language, but for teaching English and other European languages to the native, especially if he has already used it for his own tongue. Again, there is no reason why a script based on the Roman character should not entirely supplant those of Oriental languages, as advocated just

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a year ago by the Rev. Mr. Knowles before the East India Association, and by me, in the case of Burmese, in a recent correspondence in the *Rangoon Gazette*.[1] The case for a Roman script in Burma is peculiarly strong, the alphabet being an Indian importation utterly unsuited from the first to the language to which it was applied, and still less suitable now owing to changes in pronunciation.

Yet, if I am not misinformed, the teaching of the Roman character to the Chins mentioned above has been discontinued—probably for want of an authorized system—and instruction in written Burmese substituted. This means that the Chins will no longer be able to write to each other in their own language. Owing to the fact that the sound of so many characters is dependent on the adjacent letter, a new combination of letters is meaningless in Burmese, and the script cannot be applied to Chin. I need hardly say that the difficulty of learning to read Burmese in the Indian character is enormously greater than if a Roman script is used, even if the tribesman has not already learnt that script for his own language.

Lastly, the science of phonetics, as distinguished from the use of a phonetic script in teaching a particular language, is coming to the front. I will ask leave to make a digression on a subject of considerable practical importance—the course of studies for the Indian Civil Service. That course is intended to fit probationers for

[1] Before the script of the International Phonetic is used for this purpose it should be simplified and harmonized for the particular language (or group of languages) to which it is to be applied. The Association provides one universal set of symbols for scientific purposes, the chief of which is an accurate record of the sounds of each language, whether that language has or has not already been reduced to writing, and of each dialect. These symbols, however, will present a motley appearance, and will often contain diacritical marks which can be dispensed with under other conditions. For popular or educational purposes they should be modified, so as to be easier to read and write and to give the printed page a more pleasing appearance. This has already been done for some European languages, though in the case of English at least a further move might be made in these directions.

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the work they have to do in India, and it can hardly be gainsaid that their first need is a knowledge of the principal spoken language of their province. A literary knowledge of the native language is useful and valuable, but when it is pursued, as it is sometimes pursued, to the exclusion of colloquial knowledge, so that a man who has passed difficult examinations is unable to carry on an ordinary conversation with a native, I think it will be agreed that there is something wrong with the system of examinations. Moreover, there is a large and growing body of opinion, especially among practical educationalists, in favour of imparting a knowledge of the spoken or living language first, and building up upon it a knowledge of the literary or dead language. To my mind there can be no question that this is the right order of things. The habit which we have acquired of beginning with the literary language has its origin in the fact that at one time only dead languages were thought worth teaching at all. This again led to more or less scientific methods being devised for teaching those languages, whereas scientific methods for teaching a spoken language did not exist until quite recently. They do exist now, however, and a thorough grounding in phonetics, together with the use of a phonetic script, are essential parts of the training. In the case of Indian Civil Service probationers it is not practicable to defer the acquisition of the literary or classical language entirely until a thorough knowledge of the colloquial has been attained; because, while the colloquial vocabulary and idioms are most easily learnt in India, the literary language is, for climatic and other reasons, best studied at home. Nevertheless, I venture to think that the foundation of a sound colloquial knowledge should be laid before the literary language is attacked, and that probationers should go out to India well equipped for learning to speak not only the principal language of their province but any other language which may be needed

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for their work. They cannot be said to be so equipped unless they have had a training in phonetics.

The science of phonetics is so little known that it may be necessary to explain what it is. Dr. Sweet, in his *Practical Study of Languages*, says on p. 4—

"The main axiom of living philology is that all study of language must be based on phonetics.

"Phonetics is the science of speech-sounds, or, from a practical point of view, the art of pronunciation. Phonetics is to the science of language generally what mathematics is to astronomy and the physical sciences. Without it, we can neither observe nor record the simplest phenomena of language."

He goes on to show the fallacy of supposing that pronunciation can be learnt by mere imitation. "This is as if fencing could be learnt by looking at other people fencing. The movements of the tongue in speaking are even quicker and more complicated than those of the foil in fencing, and are, besides, mostly concealed from sight.

"Even in the case of children learning the sounds of their own language the process is a slow and tedious one, and the nearer the approach to maturity the greater the difficulty of acquiring new sounds. Indeed, the untrained adult seems to be often absolutely incapable of imitating an unfamiliar sound or even an unfamiliar combination of sounds. . . . Even those who devote their lives to the study of languages generally fail to acquire a good pronunciation by imitation perhaps after living ten or twenty years in the country and learning to write the language with perfect ease and accuracy."

He points out that there is an organic side of phonetics, in which the actions of the organs of speech are described, and an acoustic side, in which sounds are described and classified. "It is evident that both the organic and the acoustic sense must be cultivated: we must learn both to recognize each sound by ear and to recognize the organic positions by which it is produced, this recognition being

effected by means of the accompanying muscular sensations."

In India we are put to shame by our own children, who, if they are brought up in the country, learn to speak the native languages with perfect accuracy. That we are most of us quite unable to do so is due simply to defective education—to a neglect of one of the most important faculties that nature has given us.

My suggestion is, therefore, that the science of phonetics should be made a basis for the study of modern Indian languages. I do not suggest it as the only basis; I think a comparative study of the structure of languages, with special reference to those to be acquired, would also be well repaid. But a grounding of phonetics is more necessary than anything else, and for it a phonetic script of some kind is indispensable. If such a grounding is given it is obvious that the Association's script is the one likely to be used.

To sum up, the Association's script fulfils all the requirements which it is called upon to fulfil. That is, it is based on the Roman alphabet; it follows the principle of "one sound, one symbol"; it is acceptable to civilized peoples generally; it can be used for any language; it can be read easily and rapidly when once mastered; it is elastic, and, considering the results, economical; it is widely used already; and there is a body of phonetic experts, the Council of the Association, ready to give assistance in applying and enlarging it.

It will be useful to ethnologists for recording new languages; to natives who have no written language, or an unsatisfactory script, for communicating with each other; to dictionary-makers for giving exact pronunciation; to transliterators for phonetic transcriptions of ancient texts; to teachers of languages, Asiatic or European, for instructing their pupils in the art of correct pronunciation; to teachers of the science of phonetics;

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and to philologists as a record of linguistic changes. As there now seems to be a reasonable probability of its coming into general use for all these purposes, I venture to suggest that the Royal Asiatic Society should not be behindhand in adopting it for its records, and in joining with the leaders of the Association in order to perfect and enlarge it with special reference to Asiatic languages.

The Association's system has been recently used by me in a paper on the Tamans of Upper Burma for the Royal Anthropological Institute. The name of the Tamans for themselves and the numerals are given below as a sample of the uses to which the script may be put—

Taman	xʌptä (xʌptɔ)
1	tɔ
2	nek
3	sùm (sʊm)
4	pəli
5	məŋɔ
6	kwa
7	sənè (sənɛ)
8	pəsè (pəsɛ)
9	təxä (təxɔ)
10	ʃi

KEY

ʌ as vowel-sound in E. *but*.
ä „ „ E. *sir*.
ɔ „ „ E. *saw*.
e „ „ F. *été*.
ù „ „ E. *put*.
ə as first vowel-sound in E. *among*.
a as vowel-sound in F. *patte*.
è „ „ E. *men*.
i „ „ F. *si*.
x as *ch* in G. *ach*.
ŋ as *ng* in E. *sing*.
ʃ as *sh* in E. *she*.

The English referred to is standard southern English.

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LINGUISTIC AREAS IN EUROP
THEIR BOUNDARIES AND POLIT
SIGNIFICANCE

BY

LEON DOMINIAN

REPRINTED FROM THE
BULLETIN OF THE AMERICAN GEOGRAPHICAL SOCIET
VOL. XLVII., JUNE, 1915

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BULLETIN

OF THE

AMERICAN GEOGRAPHICAL SOCIETY

VOL. XLVII 1915 No. 6

LINGUISTIC AREAS IN EUROPE: THEIR BOUNDARIES AND POLITICAL SIGNIFICANCE

By LEON DOMINIAN

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1. INTRODUCTION

The purpose of this paper is to show that definite relations exist between linguistic areas in Europe and the geography of the continent and that application of facts derived from a study of this science to frontier delimitation is valid and practicable. The work was planned and executed under the direction of Councillor Madison Grant, who has drawn on his studies of European anthropology and history, as well as on a wide knowledge of the European continent, to supply the writer with numerous notes besides carefully revising the final proof and making many valuable additions. It is regretted that limitations of space have necessitated restricting presentation of a number of fundamental relations to bare statements of fact. This deficiency is remedied in part by the list of sources given in the footnotes. The nationality of authorities cited

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should be determined prior to consultation, as divergences of views corresponding to conflicting national aims are not infrequent.[1]

Modern history has entered a stage in which determination of national boundaries is intimately connected with distribution of languages. International events in the past two centuries have been marked by constant endeavor to provide conformity of political and linguistic frontiers. The progress of western Europe in this respect is satisfactory. The eastern section of the continent contains problems which have defied diplomatic solution.

Linguistic areas in common with other data of geography have been largely determined by the character of the surface covered or delimited. Occurrences such as the expansion of Polish to the Carpathian barrier or the restriction of Flemish to the lowland of northwestern central Europe cannot be attributed to mere haphazard. Determination of linguistic boundaries, therefore, implies due recognition of selective influences attributable to surface features. But the influence of region upon expansion or confinement of language is far from absolute. The part played by economic factors will be shown in the following lines to have been of prime importance.

Considered as political boundaries, linguistic lines of cleavage have a twofold importance. They are sanctioned by national aspirations and they conform with physical features. Every linguistic area considered in this paper bears evidence of relation between language and its natural environment.[2] A basis of delimitation is therefore provided by nature. Eastern extension of French to the Vosges, confinement of Czech to a plateau enclosed by mountains, uniformity of language in open plains and river basins, all are examples of data provided by geography for the use of statesmen engaged in the task of revising boundaries.

Europe may be aptly regarded as a vast field of settlement where the autochthonous stock has again and again been swamped by successive flows of eastern and southern immigrants. The wanderings of these invaders have been directed in part into channels provided by Eurasian structural features. Within historic times Celts have been driven westward by Teutons, who in turn were pressed in the same direction by Slavs. The consequence is

[1] The writer gratefully records his appreciation of the generosity of many members of the Council of the Society for providing a special appropriation for the execution of the maps. Acknowledgment of important suggestions is also due to Professors Palmer, Le Compte and Seymour of Yale University, as well as to Professor Jordan of Columbia University.

[2] Linguistic maps accompanying this paper should, in every instance, be examined concurrently with good atlas sheets.

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that few Frenchmen or Germans of our day can lay claim to racial purity. As a matter of fact, northern France is perhaps more Teutonic than Southern Germany, while eastern Germany is in some respects more Slavic than Russia. The political significance of race is, therefore, trifling.

Nationality, however, an artificial product derived from racial raw material, confers distinctiveness based on history. It is the cultivated plant blossoming on racial soil and fertilized by historical association. Language, the medium in which is expressed successful achievement or struggle and sorrow shared in common, therefore acquires cementing qualities. Its value as the cohesive power of nationality is superseded in rare instances by ideals similarly based on community of tradition or hope and in some cases of religion. Belgium and Switzerland afford good examples of such exceptional instances. Broadly, it may be submitted that the development of civilization in most countries has been marked by the progress of nationality, while nationality itself has been consolidated by identity of speech.

2. The Franco-Flemish Boundary

The westernmost contact between Romance and Teutonic languages occurs in French Flanders and Belgium. Starting at a few miles south of Dunkirk,[3] the linguistic divide follows a direction which is generally parallel to the political boundary until, at a few miles east of Aire, it strikes northeast to Halluin, which remains within the area of French speech. From here on to Sicken-Sussen, near the German border, the line assumes an almost due east trend.

This division corresponds to the mountainous and depressed areas into which Belgium is divided. The upland has ever been the home of French. Walloon is but a modified form of the old langue d'oïl.[4] Flemish, on the other hand, is a Germanic language which spread over Belgian lowlands as naturally as the Niederdeutsch dialects to which it is related had invaded the plains of northern Europe. This east-west line also marks the separation of the tall, blond, long-skull Flemings from the short, dark, round-skull Alpine Walloons.

[3] G. Kurth, La Frontière Linguistique en Belgique et dans le Nord de la France. Mém. couronnés, Acad. R. Sci. Let. et Beaux-Arts de Belg., XLVIII, Vol. I, 1895, Vol. II, 1898, Bruxelles; Map, 1:400,000 published in Feb. 1900.

[4] Cf. map: Ausbreitung der Romanischen Sprachen in Europa, 1:8,000,000. Gröber's Grundriss der Romanischen Philologie, Trübner, Strassburg, 1904–1906. See also Gillieron et Edmont, Atlas Linguistique de la France, Champion, Paris.

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In northwestern France the language of the plain has steadily receded since the 13th century before the uplander's speech.[5] At that time Flemish was spoken as far south as the region between Boulogne and Aire. The area spreading east of the Strait of Dover between the present linguistic boundary and a line connecting these two cities is now bilingual, with French predominating. It might be noted here, however, that Boulogne has been a city of French language since Frankish days.

Within Belgian territory the linguistic line has sustained slight modification in the course of centuries. The country may be conveniently divided into a northern section, the inhabitants of which consider Flemish as their vernacular, but who also generally know French, and a southern section peopled by French-speaking inhabitants who adhere to the use of Walloon dialects in the intimacy of their home life. A small area in eastern Belgium is peopled by Germans.[6]

The figures of the last (Dec. 31, 1910) Belgian census[7] show that the Flemish provinces are bilingual, whereas the Walloon region is altogether French. Knowledge of French as an educational and business requirement accounts for its occurrence in Flanders. The Romance language, therefore, tends to supersede the Germanic idiom as a national vernacular. Utter absence of Flemish in the Belgian Congo constitutes perhaps the strongest evidence in favor of French as Belgium's national language.

The linguistic dualism is traceable to the period of the Roman conquest. Intercourse at that time between the Belgæ dwelling south of the Via Agrippa and the Romans who were pushing steadily northwards was intimate. The Latin of the Roman invaders modified by the Celtic and Germanic of the native populations gave birth eventually to the Walloon of subsequent times.[8]

The Belgæ of the lowlands farther north, however, successfully resisted the efforts made by the Romans to conquer them. The marshes of their nether country and the forested area which was to be laid bare by the monks of the Middle Ages constituted a stronghold in the shelter of which Germanic dialects took root.

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[5] Kurth, *loc. cit.* Kurth's work is based partly on toponymic data; its value as an ethnographic document equals its importance as a contribution to the distribution of languages in western Europe. L. De Backer, La Langue flamande en France. Samyn, Gand, 1893.

[6] N. Warker, Die deutschen Orts- und Gewässernamen der Belgischen Provinz Luxemburg, Deut. Erde, Vol. VIII, 1909, pp. 99, 139. Maps important.

[7] Statistique de la Belgique, Recensement général de 1910, Vol. II, 1912, Vol. III, 1913, Bruxelles.

[8] The Belgæ of Cæsar are probably represented by the Teutonic populations of northern France, Flanders and Batavia rather than by the Walloons.

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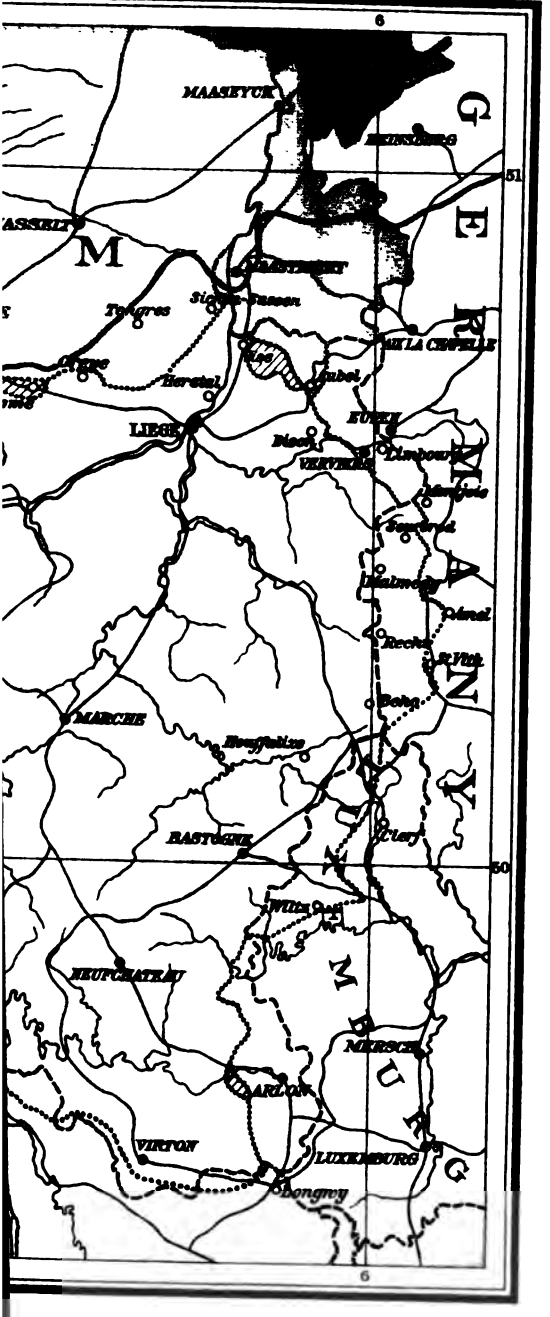

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At a later date the growth of the temporal power of the Roman Church witnessed the establishment of a number of bishoprics over districts segregated irrespective of linguistic differences. Perhaps one of the most notable facts of Belgian history is found in the fact that its linguistic and political boundaries have never coincided. Every century is marked by renewal of the age-long clashes between the Germanic and Romance races which have been thrown in contact along the western end of the line of severance between the plains of northern Europe and the mountainous southland of the continent.

In recent years a keen struggle for predominance between Flemings and Walloons is observable in Belgium. Language had been adopted as the rallying standard of both parties. Aggravation of this feud may yet lead to secession. The Flemish provinces might then cast their political lot with the Dutch. The languages spoken in Holland and Flanders are practically identical. Religious differences alone have stood in the way of political fusion in the past. The revolt of the Netherlands from Spanish authority had led to the independence of Protestant provinces only. Flemish princes, swayed by religious scruples, refused to side with the Protestant communities whose political connection had been established by the Union of Utrecht in 1579. At present the severance of religious from political issues and the menace of absorption by Germany may drive the Flemings to join their close kinsmen of the lowlands on the north.[9] A state formed by this union could be named the Netherlands in all propriety. Its geographical foundation would be secure. Walloons would then naturally revert to French allegiance. The coincidence of political and linguistic boundaries in the westernmost section of central Europe would thus become an accomplished fact.

3. The Franco-German Boundary

In its central section the long contact line between French and German languages conforms approximately with the political line dividing the two countries. Modifications which French frontiers underwent since the Treaty of Utrecht may be regarded as final adjustments in a prolonged process of adapting political to linguistic boundaries. The Napoleonic period of political disturbances brought about an abnormal extension of the northern and eastern line. Between 1792 and 1814 almost all of the territory of Belgium

[9] Germany's violation of Belgian neutrality in 1914 was followed by endeavors to induce Flemings to favor annexation of their land to Germany on the plea of ancestral kinship.

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and Holland was annexed and the eastern frontier extended to the Rhine. Foreign populations in Holland, Flanders, Rhenish Prussia and the western sections of Hesse and Baden passed under the administrative control centered at Paris. But their subjection to Napoleon's artificial empire was of relatively short duration. The German-speaking people in 1813 united in a great effort to drive the French across the Rhine. They were merely repeating the feat of their ancestors who at a distance of eighteen centuries had defeated the Latin-speaking invaders of their country led by the Roman Varus. Success in both movements was helped to a certain extent by community of feeling based on identity of language. In 9 A. D. the Romans were forced back to the Rhine from the line they occupied on the Weser. The treaty of Vienna restored French boundaries to the lines existing in 1790. French territory again reverted to the approximately normal boundaries which enclose members of the French-speaking family. The union of Frenchmen into a compact political body was shattered, however, by the treaty of Frankfurt in 1871, when France was obliged to cede important strips of French-speaking territories in Alsace-Lorraine to Germany.

The part to be played by Lorraine in the history of Franco-German relations was laid out by nature itself. The province has always been the seat of a wide pathway connecting highly attractive regions of settlement. It lies midway between the fertile plains of the Rhine and the hospitable Parisian basin. It is also placed squarely in the center of the natural route leading from Flanders to Burgundy. The region is physically part of France. It has therefore been inhabited mainly by French-speaking inhabitants. At the same time, the lack of a natural barrier on the east facilitated Teutonic incursions. In particular, the Moselle valley has favored easy access into Lorraine throughout history. In the Middle Ages and until the 18th century the province was part of the Empire and largely German speaking. This language still persists in the eastern parts. The region was thus a border land disputed first by two adjoining races and subsequently by two neighboring countries.

This long period of successive conflicts necessarily witnessed modifications of linguistic boundaries. Glancing as far back as the end of the Middle Ages, a slight westerly advance of the area of German speech may be ascertained for the period between the 10th and 16th centuries.[10] From that time on, however, the regional

[10] H. Witte, Das Deutsche Sprachgebiet Lothringens und seine Wandlungen, etc. Forsch. z. Deutsch-Landes- u. Volksk., VIII, 1894, pp. 407–535.

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gain of French has been in excess of previous German advances. Data obtained from place names often afford valuable clues to earlier distribution of languages in this region. Occurrences of the suffix "ange," which is the Frenchified form of the German "ingen," in names lying west of the present line show the extent of territory reclaimed by the French language.[11]

Alsace is the region defined by the valley of the Ill. The wall of the Vosges Mountains marks its western limits. Its easterly extension attains the banks of the Rhine. This elongated plain appears throughout history as a corridor through which races of men marched and countermarched. The Alpine race provided it with early inhabitants. Romans subjugated the land in the course of imperial colonization. The province subsequently passed under Germanic and Frankish sway. Its entry into linguistic history may be reckoned from the year 842, when the celebrated oaths of Strassburg were exchanged in Romance and Teutonic vernaculars by Charles the Bald and Louis the German. The alliance of these two sovereigns against Lothair at this time marked the beginnings of the German destiny of Alsace. After 925 the province became part of the Teutonic domain and remained German except during the period of French occupation which lasted from 1681 to 1871.

A highway of migration cannot be the abode of a pure race. Its inhabitants necessarily represent the successive human flows by which it has been overrun.[12] The Alsatian of the present day is, accordingly, a product of racial mingling. But the blending has conferred distinctiveness, and Alsatians claiming a nationality of their own find valid arguments in racial antecedents no less than in geographical habitation. The red soil of their fertile plains symbolizes the native land in their minds as it reveals itself to perception with the attribute of unity. Alsatians have responded to such an environment to the extent of representing a distinct group in which the basal Alpine strain has been permeated by strong admixtures of Teutonic blood. The confusion of dark and fair physiognomies represents the two elements in the population.[13] In a broader sense the Alsatians are identical with the Swiss population to the south and the Lorrainers and Walloons to the north. The districts occupied by all these people once constituted the Middle Kingdom of Burgundy.

[11] L. Gallois, Les Limites linguistiques du français, Ann. de Géogr., IX, 1900, p. 215.

[12] Anthropologic data for the southwestern section of Alsace are instructive. The generation of a transition type between the short and sturdy Alpine type and the "sesquepedal" Teuton is observable. Cf. Ripley, The Races of Europe, Appleton, New York, 1899, pp. 225-6.

[13] French writers claim an average brunetteness of 70% for Alsace and point thereby to the predominance of the Celtic strain.

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Alsace was a province of purely German speech until the end of the 18th century. French took solid foothold mainly after the revolution and during the 19th century. An enlightened policy of tolerance towards the province's institutions cemented strong ties of friendship between the inhabitants and their French rulers. Alsatian leanings towards France were regarded with suspicion by the victors of 1871, who proceeded to pass prohibitionary laws regarding the use of French in schools, churches or law courts. These measures of Germanization were attended by a notable emigration to France. In 1871 there were 1,517,494 inhabitants in Alsace-Lorraine. The number dwindled to 1,499,020 in 1875 in spite of 52.12% excess of births over deaths.

Nancy by its situation was destined to welcome Alsatians who had decided to remain faithful to France. The number of immigrants it received after the Franco-Prussian war was estimated at 15,000.[14] Pressing need of workingmen in the city's growing industrial plants intensified this movement. Alsatian dialects were the only languages heard in entire sections of the urban area. Peopled by about 50,000 inhabitants in 1866, Nancy's population jumped to 66,303 in 1876. Metz, on the other hand, with a population of 54,820 inhabitants in 1866, could not boast of more than 45,675 citizens in 1875. The census taken in 1910 raised this figure to 68,598 by including the unusually strong garrison maintained at this point.

The present line of linguistic demarcation in Alsace rarely coincides with the political boundary. Conformity is observable only in stretches of their southernmost extension. East and southeast of Belfort, however, two areas of French speech spread into German territory at Courtaron and Montreux.

In the elevated southern section of the Vosges the line runs from peak to peak with a general tendency to proceed east of the crest line and to reveal conspicuous deflections in certain high valleys of the eastern slope. Its irregularity with respect to topography may be regarded as an indication of the fluctuation of racial sites in early historical times.

From Bären Kopf to about 10 miles beyond Schlucht Pass the mountainous divide and linguistic line coincide. Farther north, however, French prevails in many of the upper valleys of the Alsatian slope. This is true of the higher sections of the Weiss basin, as well as the upper reaches of the Bruche. At a short dis-

[14] R. Blanchard, Deux Grandes Villes Françaises. La Géogr., XXX, Nos. 2-6, 1914, pp. 120-121.

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tance south of the sources of the Liepvre, parts of the valley of Markirch (Sainte-Marie-aux-Mines) are likewise French. Here, however, the influx of German miners who founded settlements as far back as the 17th century have converted the district into an area linguistically reclaimed by Germans. Altogether it was estimated that in 1910 French was spoken by 204,262 inhabitants of Alsace-Lorraine out of a total population of 1,814,564.[15]

Two methods of indicating the presence of a French element in Alsace-Lorraine are given in the map of this region accompanying this article. Percentages according to administrative districts[16] have been contrasted with actual extension of French predominance.[17] The map shows concordance of French and German authorities regarding the German character of Alsace, as well as the French nature of a substantial portion of Lorraine. The Rhine valley, a natural region, appears throughout as an area of German speech. Viewed in this light, French claims favoring extension of the country's western boundary to the left bank of the Rhine deserve consideration only if grounded on Alsatian preference for French nationality. They cannot rest on a sound geographical foundation.

Of all so-styled natural boundaries, a river perhaps is the most unsatisfactory.[18] Conventional representation of its course on paper provides the map with black lines which on casual inspection impart semblance of a break in regional continuity. Reasoned examination, however, discloses the similarity of the land extending beyond both banks. Allowance being made for difference of elevation between the upper and lower courses of a river, the unit region is obviously constituted by the entire basin. All the data of observation reveal regional unity in the valley of the Rhine.

The political case of Alsace-Lorraine, viewed from the linguistic standpoint, may be summed up as follows: Alsace is German. Areas of French in this province consist of intrusions of minor importance. It is evident that the Vosges Mountains have prevented expansion of French towards the valley of the Rhine. Lorraine, however, which was also German, was devoid of a natural barrier that might have arrested the spread of French. Consequently it has been partly regained by that language.

Beyond Alsace, French and German meet along a line which

[15] *The Statesman's Yearbook*, 1914, p. 934.
[16] After the language map of Alsace-Lorraine in Andree's Handatlas, Pl. 67-68, 6th ed.
[17] After Gallois' map, Pl. IV, Vol. IX, Ann. de Géogr., 1900.
[18] Lord Curzon, Frontiers, The Romanes Lectures, Clarendon Press, Oxford, 1907.

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extends across western Swiss territory to the Italian frontier.[19] Its present course has been maintained since the fifteenth century.[20] Beginning at Lucelle, the line crosses the Jura mountains west of Solothurn. Lake Neuchâtel is surrounded on all sides except the northeast by French-speaking communities. The western and southern shores of Lake Morat are likewise French. Fribourg, a city in which the struggle for linguistic supremacy is strenuous, lies at the edge of French-speaking territory. The line becomes better defined in the upper valley of the Rhone, where it coincides with the divide between the Val d'Anniviers and the Turtmann Thal. The construction of the Simplon tunnel appears to have been the cause of an extension of French influence in this region and recession of German from the Morge valley to the east of Sierre lies within the memory of living natives.

The origin of linguistic differences in Switzerland may be traced to the early history of the country. At the time of Cæsar's conquests Helvetia, then peopled by Celts, became subjected to Rome's imperial rule. Later, during the period of invasions, the Helvetians were conquered by the Burgundians, a Germanic tribe, who settled in the western part of the country. A fusion of the two peoples followed this conquest. The Celtic and Latin languages then prevailing gave birth to French which became essentially the speech of the Jura highlanders. German, on the other hand, is a relic of Teutonic invasions in eastern and central Switzerland. In the 6th century the Alemanni took advantage of the weakening of the Burgundian kingdom to spread beyond the Aar and overrun the attractive lake district. By the 11th century they had succeeded in imposing their language on the native population of the Fribourg and Valais country. Religious struggles beginning in the 15th century and maintained to the 17th century furthered the westerly advance of the Germans.

The history of Switzerland shows pertinently that, at bottom, language does not always suffice to constitute nationality. Diversity of language has not impaired Switzerland's existence as a sovereign nation. Racial lack of unity in its population has likewise failed to weaken national feeling. The indomitable determination of Swiss to protect the liberal institutions and the religion around which their national life revolved has maintained their independence throughout the course of centuries.

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[19] P. Langhans, Die Westschweiz mit deutscher Ortsbenennung 1:500,000. Deut. Erde, V, 1906, Pl. 5.

[20] L. Gallois, Les limites linguistiques du français, Ann. de Géogr., Vol. IX, 1900, p. 218.

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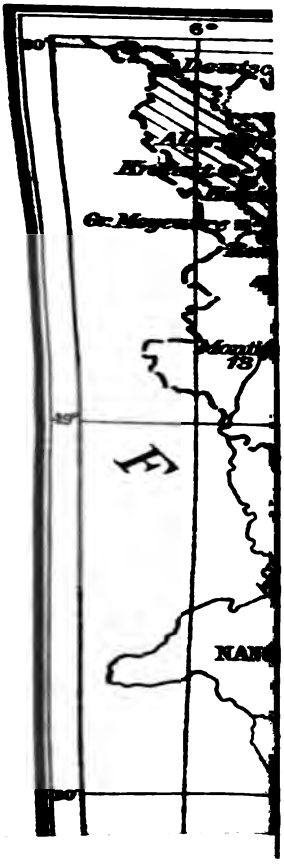

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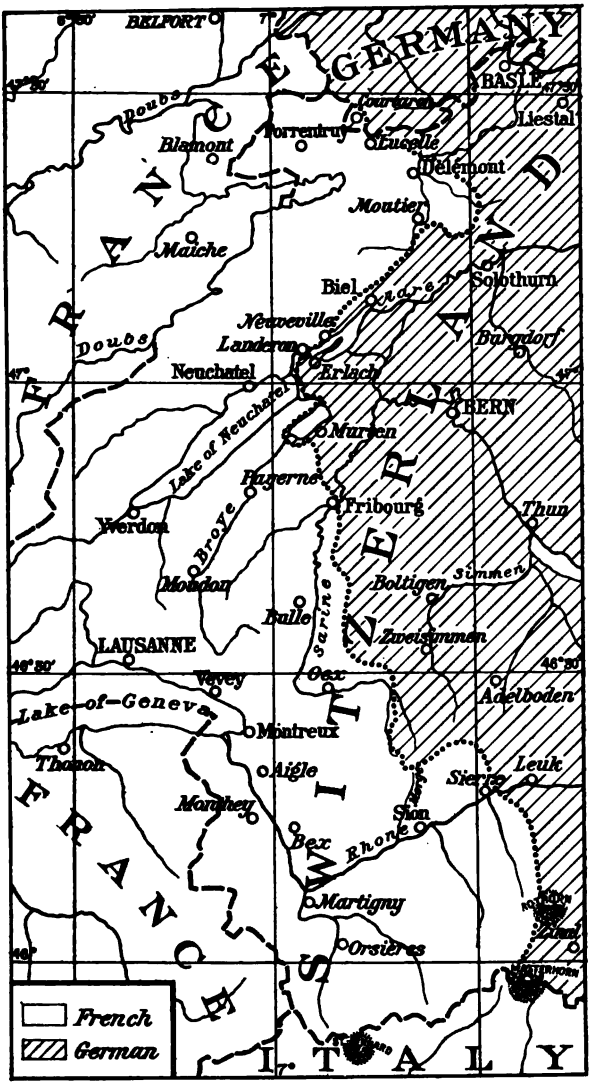

FIG. 1—The boundary between French and German in Switzerland. Scale, 1:1,485,000.

4. THE AREA OF GERMAN SPEECH

The area of German speech is interposed between the territories of Slavic and Romance languages. Niederdeutsch or Plattdeutsch, the language of the plain, is restricted to the extensive northern lowlands. Dialects spoken in Westphalia, Holstein, Mecklenburg,

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Brandenburg and Prussia enter into its composition. The wealth of words in this tongue seems to indicate that ease of life on the plain favored greater development of thought. Relative sterility of the vocabulary derived from mountainous sections of central and southern Germany is brought out by contrast.

Oberdeutsch is the German of the highland. It comprises the Bavarian, Swabian and Alemannic dialects of Bavaria, Wurtemberg and Baden. Its adoption as the literary language of all German-speaking people became well established in the Middle Ages. Luther's translation of the Bible, written in a combination of Upper and Middle German, contributed no mean share in the diffusion of the language. Printed German also followed this form. Its use has been favored by Germany's most noted writers since the 17th century. It is fast becoming the language of the educated classes. Its dissemination by the agency of schools and newspapers tends to convert it eventually into the only idiom that will survive within German boundaries.

The transition from the northern plain of Germany to high central regions is represented on the surface by a zone of intermediate uplands in Saxony, Lusatia and Silesia. This area is also characterized linguistically by a transitional form of speech between Niederdeutsch and Oberdeutsch.[21] The greater similarity, however, of this intermediate language to Oberdeutsch is observable to the same extent that the rising land over which it is distributed presents greater analogy to the mountainous region towards which it tends. The transitional dialects include Frankish, Hennebergian and Saxon. They occur in the middle Rhineland, Hesse, Thuringia and Saxony.

Outside this central mass of Germans living in Germany and Austria, the language prevails in the Baltic provinces of Russia, where Protestantism is strongly established. This region was known as the German provinces up to 1876. In that year substitution of Russian to German inaugurated Russification of the area by the government. Colonies of Germans are also found in southwestern Russia from the headwaters to the mouth of the Dniester. The valley of this river as well as that of the Dnieper was peopled by peasants who emigrated from Würtemberg, Saxony and Switzerland during the reign of Catharine the Great. Many of the settlements still bear German names. The presence of Teutons in this part of Russia is devoid, however, of political significance.

[21] Cf. Sheets 12a, Europa, Fluss- Gebirgskarte, and 12c, Europa, Sprachen and Völkerkarte, both 1:12,000,000, in Debes' Handatlas.

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5. The Danish-German Boundary

Lack of conformity between political and linguistic boundaries along the Danish-German frontier has caused ceaseless strife tween the two nationalities. Denmark's hold on Schleswig-Holstein prior to 1866 had engendered bitter feeling among Germans who considered the subjection of their kinsmen settled on the right bank of the Elbe estuary as unnatural. After Prussia had annexed the contested region, it was the Danes' turn to feel dissatisfied and to claim the districts occupied by their countrymen.

The present Danish-speaking population of Schleswig-Holstein is variously estimated at between 140,000 and 150,000. These subjects of the Kaiser occupy the territory south of the Danish boundary to a line formed by the western section of the Lecker Au, the southern border of the swampy region extending south of Renz and the northern extension of the Angeln hills. Between this line and the area in which German is spoken a zone of the old Frisian tongue of Holland survives along the western coast of the peninsula. Frisian is also spoken in the coastal islands.

The degree to which linguistic variations adapt themselves to physical configuration is admirably illustrated in this case by the southerly extension of Danish along the eastern section of the peninsula where persistence of the Baltic ridge appears in the hilly nature of the land. The Niederdeutsch of the long Baltic plain also continued to spread unimpeded within the low-lying western portion of the narrow peninsula until its northerly expansion was arrested by uninhabited heath land. The presence of Frisian along the western coast is undoubtedly connected with the adaptability of Frisians to settle in land areas reclaimed from the sea.

The province of Schleswig began to acquire historical prominence as an independent duchy in the 12th century. Barring few interruptions its union with the Danish crown has been continuous to the time of the Prussian conquest. In 1848 both Schleswig and Holstein were disturbed by a wave of political agitation which expressed itself in demands for the joint incorporation of both states in the German Confederation. The extent to which the mass of the Danish inhabitants of the duchies took part in this movement is open to historical controversy. Holstein was an ancient fief of the old Germano-Roman Empire. Its population has always been largely German. But the duchy of Schleswig is peopled mainly

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by Danes. By the terms[22] of the Treaty of Prague of Aug. 23, 1866, both Austria and Prussia had agreed to submit final decision on the question of nationality to popular vote. The provisions of the clause dealing with the referendum, however, were not carried

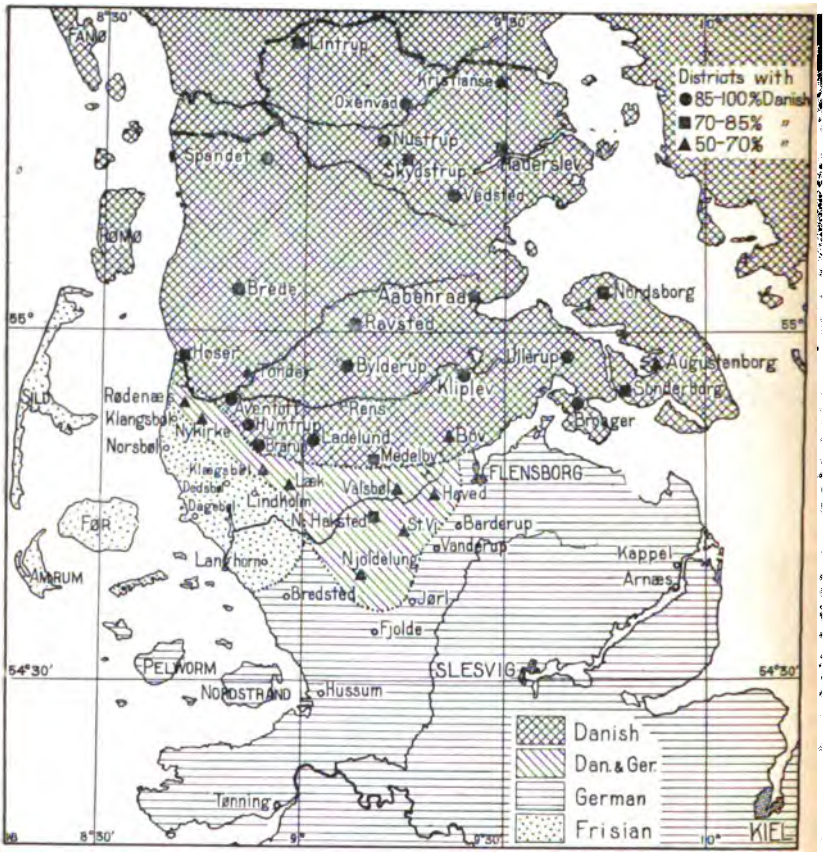

FIG. 2—Sketch map of Schleswig-Holstein showing languages spoken. According to the Danish viewpoint. Scale, 1:1,200,000 (after Rosendal based on Clausens and Heyers.)

out, and on Jan. 12, 1867, Schleswig was definitely annexed by Prussia.[23]

Incorporation of the Danish province was followed by systematic

[22] [Translation]: Art. V. His Majesty the Emperor of Austria transfers to His Majesty the King of Prussia all the rights which he acquired by the Vienna Treaty of Peace of 30th October, 1864, over the Duchies of Holstein and Schleswig, with the condition that the populations of the Northern Districts of Schleswig shall be ceded to Denmark if, by a free vote, they express a wish to be united to Denmark. E. Herstlet, The Map of Europe by Treaty, Vol. III, p. 1722, Butterworths, London, 1875.

[23] A later treaty signed by Austria and Prussia at Vienna on October 11, 1878, suppressed the referendum clause, which had never been viewed with favor by the German Government.

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attempts to Germanize the population[24] through the agency of churches and schools. In addition, a number of colonization societies, such as the "Ansiedelungs Verein für das westliche Nordschleswig" founded at Rödding in 1891[25] and the "Deutsche Verein

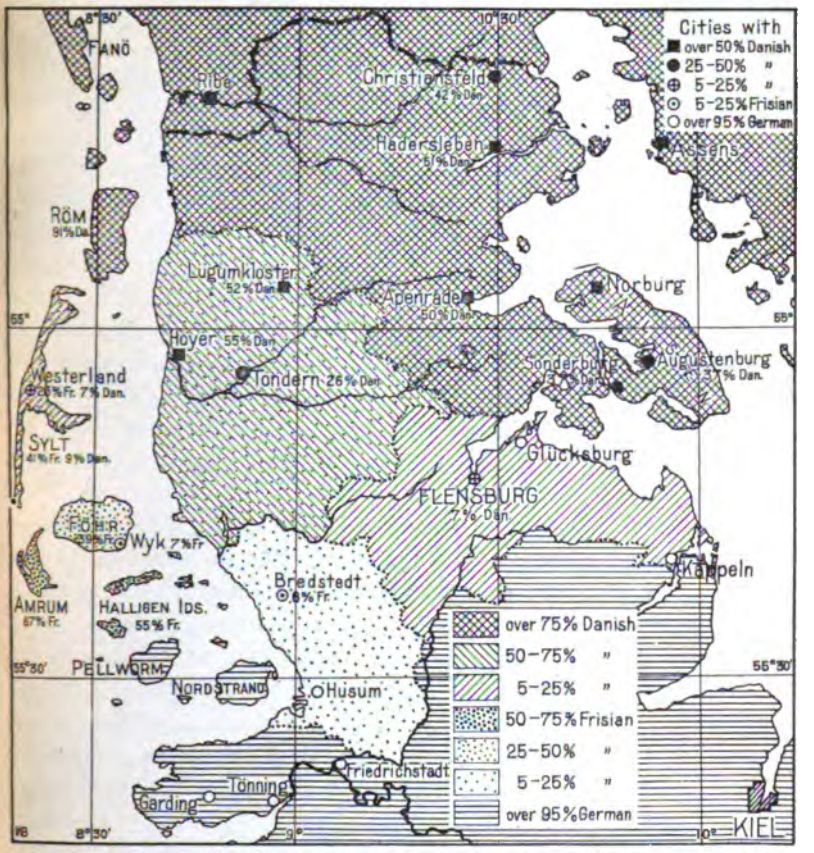

Fig. 3—Sketch map of Schleswig-Holstein showing languages spoken. According to the German viewpoint. Scale, 1:1,200,000. (Based on maps on pp. 59, 60 Andree's Handatlas, 6th ed.)

für das nördliche Schleswig," were formed to introduce German ownership of land in Danish districts. The final years of the 19th century in particular constituted a period of strained feeling between Danes and Germans owing to unsettled conditions brought about by duality of language and tradition.

At present the problem of Schleswig is considered settled by the German government. A treaty signed on Jan. 11, 1907, between

[24] M. R. Waultrin, Le rapprochement dano-allemand et la question du Schleswig. Ann. Sci. polit., May 15, and July 15, 1908.

[25] L. Gasselin, La Question du Schleswig-Holstein, Rousseau, Paris, 1909.

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the cabinets of Berlin and Copenhagen defined the status of the inhabitants of the annexed duchy. The problem of the "Heimatlose," or citizens without a country,[26] was solved by recognition of the right of choice of nationality on their part. The German government considered this measure as satisfying the aspirations of its subjects of Danish birth. Nevertheless, the acquiescence of Danes living in Germany to any solution other than the adoption of linguistic boundaries as frontiers between Denmark and Germany remains doubtful. The standpoint of speech gives evidence of the thoroughly Danish character of northern Schleswig. The southern part of this province together with the whole of Holstein is undoubtedly German.

6. The Italo-German Boundary

The southern boundary of Germanic speech abuts against Italian from Switzerland[27] to the Carinthian hills. Along this contact zone a notable intrusion of the Romanic tongue within the Austrian political line is observable in the Tyrol. This foreign area lacks homogeneity, however, for it is Italian proper in western Tyrol and Ladin in its eastern extension.

The southerly advance of German in the mountainous province has followed the valleys of the Etsch and Eisack, showing thereby that the channels through which mountain waters flowed towards the Adriatic also facilitated transit of goods and the language of the traders from the German highlands of central Europe to the Mediterranean. A steady current of freight has been maintained in a southerly course along this route since the origins of continental commerce in Europe. By the Middle Ages numerous colonies of German merchants had acquired solid footing along the much-traveled road over the Brenner Pass, which connected Augsburg and Venice.[28]

This protuberance of German occupies the valley of the Etsch south of its confluence with the Eisack. The divide between the two languages has its westernmost reach at Stelvio near Trafoi.[29] The junction of Swiss and Austrian political boundaries at this point corresponds to the contact between the German of the Tyrol and the Romonsh idioms of Engadine. Thence the linguistic line of separation skirts the base of the Ortler massif and subsequently coincides with the watershed of the Etsch and Noce rivers.

[26] L. Gasselin, *loc. cit.*, p. 206.

[27] Blocher u. Garraux, Die deut. Ortsnamenformen in Westschweiz. Deut. Erde, V, 1906, p. 170.

[28] O. Noel, Histoire du Commerce du Monde, II, pp. 148–168. Plon, Paris, 1891.

[29] B. Auerbach, Races et Nationalités en Autriche-Hongrie, Alcan, Paris, 1898, p. 86.

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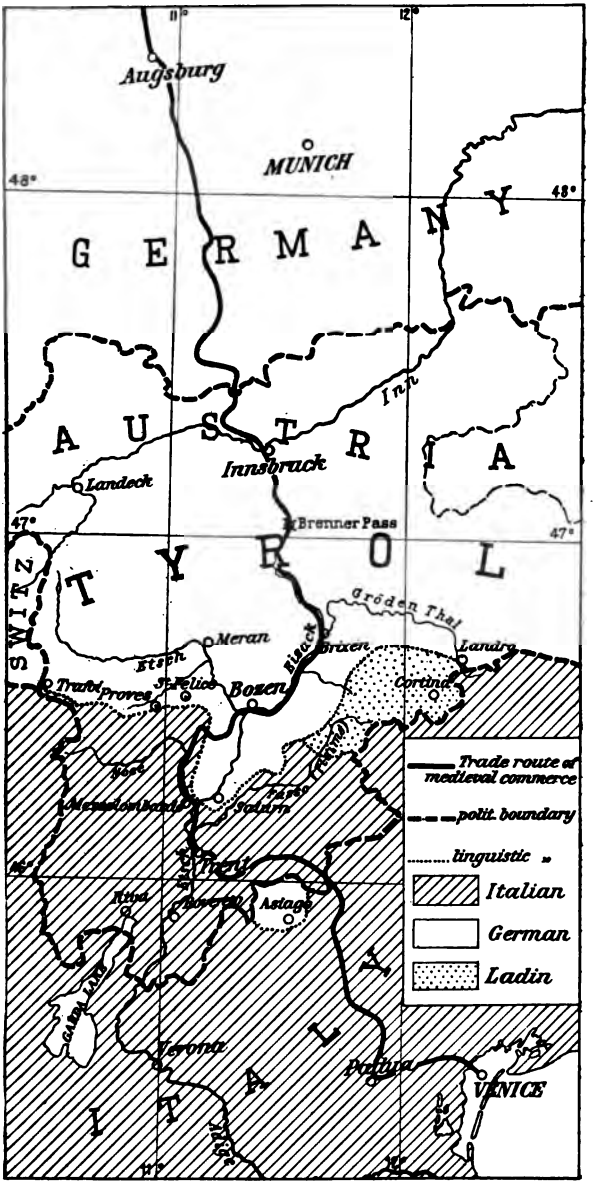

FIG. 4—Sketch map of the Trentino showing languages spoken.
Scale, 1:2,400,000.

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Ladin settlements begin north of the Fleims valley[30] and spread beyond the Gröden basin to Pontebba and Malborghet, where the meeting of Europe's three most important linguistic stocks, the Romanic, Germanic and Slavic, occurs.

The Italian section of the Tyrol constitutes the Trentino of present day Italian irredentists. As early as 774 Charlemagne's division of the region between the kingdoms of Bavaria and of Italy had implied recognition of linguistic variations. But the importance of maintaining German control over natural lines of access to southern seas determined his successors to award temporal rights in the southeastern Alps to bishops upon whose adherence to Germanic interests reliance could be placed. The bishopric of Trentino thus passed under the Teutonic sphere of influence which is preserved to-day by the political union of the territory of the old see to the Austrian Empire. Definite annexation of the Trentino to the province of Tyrol took place in 1815.

In its eventful history during the present millennium the Tyrol has been the cockpit of Germano-Romance clashes. A lively trade competition between German and Italian traders has ever been maintained within its borders. During the era of religious upheavals the Germans rallied to the cause of reformation, while the Italian element remained faithful to the authority of the Vatican. Contact with the Teutonic element appears to have failed, however, to eradicate or modify the Italian character of the region's institutions or its life.[31] In this respect the colossal statue of Dante in front of the main railway station in the city of Trent symbolizes faithfully the aspirations of the majority of the inhabitants of the Trentino.

7. The Italo-Slavic Boundary

The Adriatic provinces of the Austro-Hungarian Empire are peopled mainly by Italians and Slavs. German and Hungarian elements in the population consist of civil and military officials as well as of merchants. From an ethnological and linguistic standpoint the maritime district is Italian or Slav according to its elevation. The Romanic stock forms the piedmont populations, while the dwellers of the hilly coast chains are of Slavic issue and speech.

The western coast of the Istrian peninsula is an area of Italian speech. The vernacular of Dante is, however, feebly represented

[30] Schneller, Deutsche u. Romanen in Südtirol u. Venetien. Petermanns Mitt., 1877, pp. 365–385.

[31] A. Galanti, I Tedeschi sul versante meridionale delle Alpi, Typ. Acad. Lincei, Rome, 1885, p. 185.

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in the Dalmatian islands and on the Illyrian coast.[32] It is generally confined to urban centers. Zara, Spalato, Sebenico, Ragusa and Cattaro[33] contain flourishing colonies of Italians whose secular commercial enterprise has contributed to establish prevalence if not predominance of their mother tongue in the region. Outside of these cities the Italian element wherever present is restricted to littoral strips. The Slavs invariably occupy the inland plateau and the slopes extending seaward.

The Istrian region of predominant Italian speech consists of the western peninsular lowland extending south of Triest[34] to the tip of the promontory beyond Pola.[35] Istrians, to whom Italian is a vernacular, form over a third of the peninsula's population. The Slavs of the Karst and terraced sections constituting the balance belong to the Roman Catholic faith, but have no other common bond with their Italian countrymen.

Settlement by Slavs of the hills dominating the Adriatic appears to have taken place continuously between the 9th and 17th centuries. Feudal chiefs of medieval times first resorted to this method of developing the uncultivated slopes and highlands of the eastern coast. The Venetian republic and the Austrian government adopted similar measures of colonization. Slavic tribes hard pressed by their kinsmen or by Tatars from the east thus found refuge in the mountainous Dalmatian coastland under the ægis of western nations. A traveler taking ship to-day and sailing from harbor to harbor along the shores of the eastern Adriatic could readily notice numerical predominance of the descendants of Slavs who, for that section of the world, constitute the mass of toilers in every walk of life, and who, sooner or later, will probably erect a political fabric on the foundation of their linguistic preponderance.

8. The Area of Finnish Speech

The eastern half of the European landmass contains a region of excessive linguistic intermingling[36] along the contact zone of the Germanic and Slavic races. The Finns occupying the northernmost section of this elongated belt are linguistically allied to the

[32] It is estimated that, in all, about 18,000 Italians live in Dalmatia.

[33] Italian predominates in both Zara and Spalato, the latter city being second in commercial importance along the Dalmatian coast.

[34] The city of Triest is peopled mainly by Italians. Its suburbs, however, are inhabited by crowded Slavic settlements. The census of 1910 shows 142,113 Italians, 37,063 Slovenes, 9,689 Germans and 1,442 Croats. For Istria returns of the same year give 147,417 Italians, 168,184 Serbo-Croatians, and 55,134 Slovenes.

[35] M. Wutte, Das Deutschtum im österreichischen Küstenland. Deut. Erde, VIII, 1909, p. 202.

[36] H. Nabert, Verbreitung der Deutschen in Europa, 1:925,000. Flemming, Glogau.

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Turki. Physically they constitute the proto-Teutonic substratum of the northern Russians with whom they have been merged. Their land was transferred from Sweden to Russia in 1808. Autonomy conceded by the Czar's government until rescinded by the imperial decree of Feb. 15, 1899, provided the inhabitants with a tolerable political status. The opening years of the present century marked the inception of a policy of Slavicization prosecuted with extreme vigor on the part of the provincial administrators.

The area of Finnish speech forms a compact mass extending south of the 69th parallel to the Baltic shores. Its complete access to the sea is barred by two coastal strips in the Gulfs of Bothnia and Finland, in both of which Swedish predominates in varying percentages.[37] The group of the Aland Islands, although included in the Czar's dominions, are also peopled by Swedes all the way to the southwestern point of Finland.[38]

This broken fringe of Swedish is conceded to be a relic of the early occupation of Finland by Swedes.[39] The Bothnian strip is remarkably pure in composition. The band extending on the northern shore of the Gulf of Finland, however, contains enclaves of the Finnish element. This is ascribed to an artificial process of "Fennification" resulting from the introduction of cheap labor in the industrial regions of southern Finland. Slower economic development of the provinces of the western coast, on the other hand, tends to maintain undisturbed segregation of the population.

9. The Area of Polish Speech

South of the Baltic the unbroken expanse now peopled by Germans merges insensibly into the western section of the great Russian plain. This extensive lowland is featureless and provides no natural barriers between the two empires it connects. The area of Polish speech alone intervenes as a buffer product of the basin of the Middle Vistula. The region is a silt-covered lowland which has emerged to light subsequently to the desiccation of a system of glacial lakes of recent geological age. It appears to have been inhabited by the same branch of the Slavic race since the beginning of the Christian era. It was the open country in which dearth of food and the consequent inducement to migration did not exist. The development of Poland rests primarily on this physical foundation. Added

[37] Atlas de Finlande, carte 46, Soc. de Géogr. de Finlande, Helsingfors, 1911.

[38] K. B. Wiklund, Språken i Finland, 1880–1900, Ymer, 1905, 2, pp. 132–149.

[39] R. Saxen, Répartition des Langues. Fennia, 30, 2, 1910–1911, Soc. de Géogr. de Fin., Helsingfors, 1911.

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advantages of good land and water communication with the rest of the continent likewise contributed powerfully to the spread of Polish power, which at one time extended from the Baltic shores to the coast of the Black Sea.

The language is current at present within a quadrilateral the angles of which are determined by the Jablunka pass in the Carpathians, Zirke on the Wartha, Suwalki in the eastern Masurian region and Sanok on the San. A northern extension is appended to this linguistic region in the form of a narrow band which detaches itself from the main mass above Bromberg and reaches the Baltic coast west of Danzig. In sum, from the Carpathians to the Baltic, the valley of the Vistula constitutes both the cradle and the blossoming field of Polish humanity and its institutions. In spite of the remoteness of the period of their occupation of the land, these children of the plains never attempted to scale mountainous slopes. The solid wall of the western Carpathians between Jablunka and Sanok, with its abrupt slopes facing the north, forms the southern boundary of the country.

This unit region in the midst of the diversity of the surface of the European continent has produced a unit language in the varied stock of European vernaculars. Uniformity of speech was thus the result of the unifying influence of a region characterized by a common physical aspect. Nevertheless, similarity of physical type among all individuals speaking Polish does not exist. Marked anthropological differences are found between the Poles of Russian Poland and of Galicia.[40] They correspond to the classification of northern Slavs into two main groups, the northernmost of which comprises the Poles of Russian Poland, together with White and Great Russians. Traces of Finnish intermixture can still be detected among them, in spite of the process of Slavicization which they have undergone. The Poles of Galicia, on the other hand, like the Ruthenians and Little Russians, reveal crossing of autochthonous populations with Asiatic and Mongoloid invaders of Europe.[41]

The southeastern extremity of the language attains the sources

[40] J. Talko-Hryncevicz, Les Polonais du Royaume de Pologne d'après les données anthropologiques recueillies jusqu'à présent. Bul. Int. Ac. Sc. Cracovie, Classe des Sc. Math. et Nat. Bul. Sc. Nat., Juin 1912, pp. 574-582.

[41] Southern Poland was overrun by Mongolians during their third invasion of Europe. The Asiatics were attacked near Szydlow on March 18, 1241, by an army of Polish noblemen recruited from Sandomir and Cracow. The defeat of the Christians enabled the invaders to plunder the latter city, besides opening the way for incursions farther north in the course of which they penetrated into Silesia by way of Ratibor and marched towards Breslau. Near Liegnitz an army of 30,000 Europeans was defeated again on April 9th of the same year. These disasters were followed by a westerly spread of the Tatar scourge. Traces of its passage can still be detected among Poles.

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of the Moravka, an affluent of the Ostrawica. In this district the line of demarcation between Ruthenians and Poles passes through Tarnograd and along the San valley. Its southern extension skirts the foothills through Rymanow, Dukla, Zmigrad, Gorlica and Gribow.[42] Thence to Jablunka it merges with the political boundary.

In its western section the physical boundary coincides for all practical purposes with the ethnographic line of division. The Polish-speaking Gorales mountaineers have never aspired to cross the divide of the Beskid Mountains. The result is that the gentler slopes of the southern side are peopled altogether by Slovaks, while habit and custom have prevented the Podhalians or Polish shepherds inhabiting the high valley of the Tatra from leading their flocks to the southern grazing slopes which form part of the Hungarian domain.[43]

Changes in the aspect of the land resulting from human activity provide an easily observable boundary between the territory inhabited by Poles and that occupied by Ruthenians. The first, proceeding from the Vistula lowland, are now scattered over a territory in which deforestation and large areas of tilled soil bespeak prolonged human occupancy of the land. The latter, coming from the Pontic steppes, reached the Carpathian slopes much later than their western neighbors. Consequently, only 20% of the surface of the western Carpathians is now available as prairie and pasture land, whereas the percentage of grazing land in the eastern section of the mountain chain is twice as high.[44] The area of ploughed land in the western region covers between 40 and 50% of the surface. In the east it barely varies between 5 and 10%. Again, the Polish section is practically clear of the forests which cover in contrast from 50 to 60% of the eastern Carpathians. Similar differences can be noted in the valleys up to an altitude of about 2,300 ft. Within them the proportion of ploughed land constitutes 88% of the surface in the Polish section. In the Ruthenian areas they do not exceed 15%.

[42] The Poles constitute the majority in the population of many cities in eastern or Russian Galicia. In Niederle's list Bobrka, Muszyna, Sanok, Lisko, Sambor, Peremysl, Rawaruska, Belz, Zolkiew, Grodek, Ceshanow, Stryj, Kalusz, Stanislawoff, Kalomya, Tarnopol, Husiatyn, Buczacz, Sokal and Trembowla are credited with over 50% Poles in their population. On the other hand, the predominance of German in the cities of Biala, Sczerzec, Dolina, Bolechow, Nadworna, Kossew, Kuty, Zablotow and Brody is attributed by the same authority to the Jewish element present. L. Niederle, La Race Slave, Alcan, Paris, 1911. A digest in English of his conclusions will be found in Ann. Rep. Smiths. Inst., 1910, Washington, 1911, pp. 599-612.

[43] E. Reclus, Géogr. Univ., Vol. III, Europe Centrale. Hachette, Paris, 1878, p. 396.

[44] E. Romer, Esquisse Climatique de l'Ancienne Pologne. Bul. de la Soc. Vaud. des Sc. Nat., 5e Sér., Vol. XLVI, June, 1910, p. 231.

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On the southwestern border the line attains the Oder in the vicinity of Bohumin. Here a number of localities in the Teschen country are claimed alike by Czechs and Poles. The increasing use of Polish and German, however, tends to invalidate the claims of Bohemians.[45] A transition zone between Czech and Polish exists here and is characterized by a local dialect of mixed language.

The western linguistic boundary of Poland extends through the German provinces of Silesia and Posen. Here a gradual replacement of the language by German since the 16th century is noticeable. At that time the Oder constituted the dividing line. As late as 1790 the population of Breslau was largely Polish. To-day over 75% of the inhabitants of the city and of neighboring towns and villages are Germans. The district north and south constitutes in fact an area of linguistic reclamation. The westernmost extension of Polish occurs in Posen at the base of the provincial projection into Brandenburg. Around Bomst the percentage of Polish inhabitants is as high as 75%. The line extends northwards through Bentschen to Birnbaum, after which it assumes a northeasterly direction. In spite of this western extension, however, the area of Polish speech within German boundaries is broken in numerous places by German enclaves of varying size.[46]

In Western Prussia, the Poles form linguistic islands in the German mass and attain Baltic shores, where they occupy the entire western coast of the Gulf of Danzig. From Oliva and Danzig the line extends to Dirschau (Tezew) and crosses the Vistula about 6 miles below this city. It then strikes east to Altmark, whence it turns southwards towards Marienwerder (Kwidzyn) and Graudenz (Grudziadz). Proceeding due east from here the boundary passes through Eylau, Osterode, the southern territory of the Masurian lakes and on into Russian territory until Suwalki is reached. The eastern frontier begins at this point and is prolonged southwards, according to Slav authorities, through Augustow, Bielostock, Surash, Bielsk, Sarnaki and Krasnostaw.[47]

The struggle for predominance between Poles and Germans along Poland's western boundary is fully nine centuries old. In the 6th century Slavonic tribes had become widely distributed between the Oder and Elbe in the course of westerly expansions

[45] J. Zemmrich, Deutsche und Slaven in den österreichischen Sudetenländern, Deut. Erde, 2, 1903, pp. 1–4.

[46] P. Langhans, Nationalitäten-Karte der Provinz Schlesien, 1:500,000. Sonderkarte No. 1 in Deut. Erde, 1906; *id.* Nationalitäten-Karte der Provinz Ostpreussen, 1:500,000. Sonderkarte No. 1 in Deut. Erde, 1907.

[47] Niederle, *loc. cit.*, p. 73, but cf. H. Praesent, Russisch Polen, etc. Petermanns Mitt., Vol. 60, December, 1914, p. 257.

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which corresponded to south and west migrations of Teutonic peoples.[48] The beginning of the present millennium witnessed the inception of a slow and powerful Germanic drive directed towards the east. Repeated German aggressions brought about the earliest union of all Polish tribes into one nation at the beginning of the 11th century. It proved, however, of little avail before the fighting prowess of the knights of the Teutonic Order who, by the first half of the 13th century, had succeeded in adding all Wend territory to Teutonic dominions. This early and northern phase of the "Drang nach Osten" brought the Germans to the coast of the Gulf of Finland. Their advance was rendered possible in part by the presence of Tatar hordes menacing southern Poland. Teutonic progress was also facilitated by the condition of defencelessness which characterizes an open plain. Between the Oder and the Vistula the slightly undulating lowland is continuous and devoid of barriers to communication which the interposition of uplifted or uninhabitable stretches of territory might have provided.

Polish history has been affected both favorably and adversely by this lack of natural bulwarks. The one-time extension of Polish sovereignty to the coasts of the Baltic and Black Seas or to within 50 miles of Berlin and the central plateau of Russia was a result of easy travel in a plain. This advantage was more than offset by the evident facility with which alien races were able to swarm back into the vast featureless expanse forming Polish territory. The very dismemberment of the country is in part the result of the inability of the Poles to resort to the protection of a natural fortress, where a stand against oppressing foes might have been made.

Poland's easterly expansion, with its prolonged and finally disastrous conflict with Russia, began after the battle of Grunwald in 1410. Although the Poles then inflicted a decisive defeat on the German knights, the western provinces they had lost could not be regained. In this eastern field the basin of the Dnieper merged without abrupt transition into that of the Vistula, just as the basin of the Oder on the west had formed the western continuation of the Baltic plain. Four centuries of struggle with Russia ensued until the Muscovite Empire absorbed the greatest portion of Poland.

The German element is slowly spreading eastward throughout the eastern provinces of Prussia which once formed part of the Kingdom of Poland. The emigration of Poles to central and western Germany partly accounts for the German gain. From the larger cities of eastern Germany, and more especially from Posen, Brom-

[48] A. C. Haddon, The Wanderings of Peoples, University Press, Cambridge, 1912, p. 48.

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berg, Gnesen and Danzig, steady flows of emigrants continually wend their way towards the industrial centers of the west, where they find higher wages and generally improved economic conditions. The German government favors this expatriation of its Slav subjects. None of the vexations to which the Poles are subjected by government officials in their native plains are tolerated in the Rhine provinces of the Empire. The result is that notable colonies of Poles have sprung up in the vicinity of industrial centers like Düsseldorf or Arnsberg, in the Münster district and the Rhine provinces. From a racial standpoint, these Poles are practically indistinguishable from the Nordic type of Teuton. Their presence in Rhenish Prussia and Westphalia is no menace to German unity. They are so easily assimilated that the second generation, speaking German alone, forgets its antecedents and becomes submerged in the mass of the native population. Slav settlements are particularly numerous and dense along the Rhine-Herne canal between Duisburg and Dortmund.[49] The heavy preponderance of Poles in certain administrative divisions of eastern Germany has, nevertheless, been unimpaired by the Polish emigration. Their percentage in the "circles" (Kreise) of Odolanow, Koscian, Ostrzeszow, Posen, Pszczynsk, Olesia and Skwierzyn still exceeds 80% of the total population. In the province of Posen the German-speaking inhabitants still are in the minority.

The Poles scattered in the eastern section of Germany constitute the largest foreign speaking element in the empire's population. Their number is estimated at 3,450,000 by Niederle. German census returns for 1900 give 3,086,489. It must be noted here that the percentage of Jews in German Poland is high, particularly in the urban areas, and that the practice of census takers is to classify them with the German or Polish population according to their vernacular. In Russia the last available census (1897) figures reveal the existence of 1,267,194 Jews[50] disseminated in the Polish provinces. This represents 13.48% of the population of Russian Poland. Here, as elsewhere, they are rarely engaged in agricultural pursuits, but show tendency to invade prosperous towns and cities.[51]

[49] K. Closterhalfen, Die Polen in Niederrheinisch-westfälisch Industriebezirk 1905. 1:200,000. Pl. 16 in Deut. Erde, Vol. X, 1911.

[50] N. Troïnitsky, Premier Recensement général de la population de l'Empire de la Russie 1897. Vols. I and II, Petrograd, 1905.

[51] The Jews cluster especially in the eastern governments of Warsaw, Lomza and Siedlce where their percentage varies between 15.6 and 16.4. This ratio is lower in the southern and western administrative divisions. In Kalisz it reaches only 7.2% and is reduced to 6.3% in Petrokow. In the cities the Jews constitute on an average slightly over a third of the population, although here again they are more numerous in the east. Cf. D. Altoff, Peuples et Langues de la Russie. Ann. de Géogr., XV, Mai 1909, pp. 9–25.

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In addition to drastic educational measures compelling study of their language, the Germans have resorted to wholesale buying of Polish estates in the sections of the kingdom of Poland which fell to the lot of Prussia when the country was partitioned. A colonization law (Ansiedelungsgesetz), decreed on April 26, 1886, placed large funds at the disposal of the German government for the purchase of land owned by Poles and the establishment of colonies of German settlers.[52] The measure was artificial and proved valueless against economic conditions prevailing in the regions affected. A decrease in the percentage of the Polish population of the estates acquired by purchase was rarely brought about. The new settlers could rarely compete with the natives. The most tangible result consisted of a mere substitution of German for Polish ownership. The mass of laborers and dependents on most of the large estates remained Poles, as they had been prior to the transaction. The breach between Poles and Germans was widened in part by the change of masters. Nevertheless, although returns corresponding to the sum of effort and money expended were not obtained, the measure has contributed to the advance of Teutonism in northeastern Europe.[53]

From the east pressure corresponding to Teutonic battering, although exerted with less intensity, is applied by Russian endeavor to create national homogeneity. Of all the different members of the widespread Slavic race the Poles and Russians are the most closely related by speech. But the affinity ends here. The formidable barrier of religious differences hampers fusion of the two nationalities. Caught between the Slavic hammer of Russian orthodoxy and the anvil of Teutonic reformation, the Poles have remained staunch Catholics. Creed in this case has played a considerable part in the preservation of national spirit.

The problem of delimiting Polish national boundaries is complicated on the east and west by the absence of prominent surface features. The lines of linguistic parting cannot be emphasized and are apt to be unstable. This circumstance detracts from their political value.

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[52] A law passed in 1908 authorizes the state to acquire land in the administrative circles in which German interests require development of colonization. B. Auerbach, La Germanisation de la Pologne Prussienne: La loi d'expropriation, Rev. Polit. & Parlem., LVII, July, 1908, pp. 109-125.

[53] P. Langhans, Nationalitätenkarte der Provinz Schlesien 1:500,000. Deut. Er., 1906, Sonderkarte 1; P. Langhans, Nationalitätenkarte der Provinz Ostpreussen 1:500,000, Deut. Er., 1907, Sonderkarte 1; Die Provinzen Posen und Westpreussen unter besonderer Berücksichtigung der Ansiedlungsgüter und Ansiedlung, Staatsdomänen und Staatsforsten nach dem Stande von 1 Januar, 1911, Deut. Erde, X, Taf. 1, 1911.

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10. The Areas of Czech and Slovakian Speech

The Czechs, who with the Moravians constitute Slavdom's European vanguard, occupy the mountain-girt plateau of Bohemia in the very heart of Europe. Here the steady advance of Teutons has prevented expansion of these Slavs along the valleys providing them with lines of easy communication with the rest of the continent. Czechs and Moravians thus found themselves bottled up inside the mountainous rim of their land by the Germans of Germany and of Austria.

The German ring surrounding Bohemia is composed of sections representing various types of the Teutonic family. The southwestern element represents the Bavarian settlers from which it is descended. Farmers and woodsmen were introduced into the Böhmerwald as an inevitable phase of the exploitation of the mountainous area by religious communities of the 13th century. The end of the Thirty Years' War was marked by a new influx of Germans needed to repopulate the sorely devastated Bohemian districts. The Bavarian element, however, never reached the foot of the eastern slopes. Modern Czech resistance to its spread toward the plateau persists unflinchingly.

The Erzgebirge uplift is a German ethnographic conquest. For centuries its mineral wealth has attracted artisans from Franconia, Thuringia and Saxony. The mountain slopes resound to-day to the sound of the dialects of these ancient countries. The Saxon element prevails particularly among the inhabitants of the Elbe valley.

Farther east, descendants of natives of Lusatia and Silesia still use the vernacular of their ancestors in the upland formed by the Iser and Riesen ranges. The valleys of these mountains yield a steady stream of German-speaking inhabitants who wend their way towards the industrial towns of the southern plain. The German workingman's competition with his Czech fellow-laborer is keen, however, in this district and has not been marked by notable advance of the Teutonic idiom.

Linguistically the Czechs and Moravians form a unit hemmed in by Germans on all sides except the east, where they abut against their Slovak kinsmen. Community of national aspirations is generally ascribed to these three Slavic groups, in which the Czech is the leading element. The union has been fostered by the lack of a literary language among Moravians with the consequent adoption

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of Czech forms of style in writing. The numerical inferiority of the Slovaks[54] found strength in this alliance.

The Czech linguistic area presents homogeneity of composition which is seldom encountered in other parts of Austria-Hungary. Intermingling of Slav and Teuton elements has been slight in this advanced strip of Slavdom. Overlap of German occurs in banded stretches generally parallel to the political divide. It is particularly noticeable in the eastern angle formed by the junction of the Böhmerwald and Erzgebirge, where it almost attains the town of Pilsen.[55] Beyond in a northerly direction the volcanic area characterized by thermal springs lies within the German line. Reichenberg, the strenuous center of Teutonism, maintains easterly and westerly prongs of German in the Iser-Riesen uplifts and the Elbe valley, respectively. The German of Silesia spreads into Moravia along the Zwittau-Olmütz-Neu Titschen line.

A short stretch of the southern linguistic area coincides with the political frontier in the neighborhood of Taus, but the balance of the southern Böhmerwald overlooking Bohemian levels is German in speech from its crests to the zone in which widening of the valleys becomes established. The disappearance of this moutainous chain in southern Moravia coincides with a southerly extension of Czech in the valley of the March. Contact with Slovak dialects begins in the Beskid area.

Celts, Teutons and Slavs have occupied in turn the Bohemian lozenge. The appellation of Czechs first appears in the 6th century. National consolidation begins with the country's conversion to Christianity three hundred years later and is maintained with varying fortunes until 1620. Bohemian political freedom suffered annihilation in that year on the battlefield of the White Mountain. After this defeat the land and its inhabitants lapsed into a state of historical lethargy. Half a century ago Czech was almost extinct. Fortunately, the high cultural attainment of some modern Czechs succeeded in rousing their countrymen to a sense of national feeling. In particular, the fire of Czech patriotism has been kept alive by literary activity.

Successful attempts on the part of Hungarians to assimilate the Slovaks has caused these mountaineers to turn to their Czech kinsmen for assistance in the preservation of race and tradition. Merg-

[54] Official Austrian figures estimate the number of Slovaks at slightly over 2,000,000. Slavic authorities generally give higher figures.

[55] J. Zemmich, Deutschen und Slawen in den österreichischen Südetenlandern, Deut. Erde, II, 1903, pp. 1-4.

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ing of national aspirations has been facilitated by close linguistic affinity. A Czecho-Slovak body consisting of 8,410,998 individuals[56] thus came into being within the Dual Monarchy in order to maintain resistance against German and Hungarian encroachments.

The Slovaks are mountain dwellers who have but slightly fraternized with Czechs and Moravians, notwithstanding close racial and linguistic affinity. The course of centuries failed to change their customs or the mode of life led in the western Carpathians. The Hungarian plain unfolded itself below their rocky habitation without tempting them to forsake the seclusion of their native valleys. Their language holds its own as far east as the Laborec valley. Junction with Polish is effected in the Tatra.

11. The Area of Hungarian Speech

The presence in Europe of Hungarians, a race bearing strong linguistic and physical affinity to Turki tribesmen, is perhaps best explained by the prolific harvests yielded by the broad valleys of the Danube and Theiss. Huns, Avars, Hunagars and Magyars, one and all Asiatics wandering into Europe successively, were enticed into abandonment of nomadism by the fertility of the boundless Alföld. Western influences took solid root among these descendants of eastern ancestors after their conversion to Catholicism and the adoption of the Latin alphabet. So strongly did they become permeated by the spirit of occidental civilization that the menace of absorption by the Turks—their own kinsmen—was rendered abortive whenever the Sultan's hordes made successful advances towards Vienna. At the same time, fusion with the Germans was prevented by the oriental origin of the race. The foundation of a separate European nation was thus laid in the Hungarian plains.

The linguistic boundary between Hungarian and German is found in the eastern extremity of the Austrian Alps.[57] The southern side of the Danube valley between Pressburg and Raab is German. Magyar spreads, however, to the north to meet the Slovak area. The line then crosses the upper valleys of the Raab and attains the Drave, which forms the linguistic boundary between Croatian and Hungarian. East of the Theiss contact with the Rumanian of Transylvania begins in the vicinity of Arad on the Maros river and extends northward in an irregular line hugging the western outlines of the Transylvania Alps and attaining the sources of the

[56] Census returns for 1910. New Inter. Encyc., Dodd, Mead & Co., New York, 1914.
[57] P. Hunfalvy, Die Ungern oder Magyaren, pp. 104-120. Prochaska, Vienna, 1881.

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Theiss. In the northeastern valley of this river Hungarian and Ruthenian language areas become contiguous.

The area of Magyar speech thus defined lacks homogeneity in its western section lying west of the Danube where important enclaves of Germans are solidly entrenched. The central portion of the monotonous expanse unfolding itself between the Danube and the Theiss, on the other hand, is characterized by uniformity of the Hungarian population it supports. Enclaves exist again all along the eastern border of this area.

A minor group of Hungarians have settled on the eastern edge of the Transylvania mountains. They live surrounded by Rumanians on all sides except on the west, where a lone outpost of Saxons brings Teutonic customs and speech to the east. The name of Szekler, meaning frontier guardsmen, applied to this body of Magyars, is indicative of their origin. Their presence on the heights overlooking the Rumanian plain bespeaks the solicitude of Hungarian sovereigns to control a site on which the natural bulwark dominating their plains had been raised. These Magyars represent at present the landed gentry of Transylvania.

This Hungarian colony was in full development at the end of the 13th century. Its soldiers distinguished themselves during the period of war with the Turks. Prestige acquired on battlefield strengthened the separate and semi-independent existence of the community. The region occupied by these Hungarians is situated along the easternmost border of the Austro-Hungarian Empire. The towns of Schässburg and Maros Vasarhely lie on its western border. But the area of Rumanian speech situated between the land of the Szekler and the main Hungarian district is studded with numerous colonies of Magyars, thereby rendering delimitation of a linguistic boundary in the region almost impossible.

The Saxon colony adjoining the Szekler area on the west is also a relic of medieval strategic necessities. In spite of the name by which this German settlement is designated, its original members appear to have been recruited from different sections of western European regions occupied by Teutons.[58] Colonization had already been started when King Gesa II of Hungary gave it a fresh impulse in the middle of the 12th century by inducing peasants of the middle Rhine and Moselle valleys to forsake servitude in

[58] F. Teutsch, Die Art der Ansiedelung der Siebenbürger Sachsen, Fors. z. deut. Land u. Volksk., Vol. 9, pp. 1-22, 1896. Cf. also O. Wittstock, Volkstümliches der Siebenbürger Sachsen in the same volume.

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their native villages in return for land ownership in Transylvania.[59]

To promote the efficiency of the soldier colonists as frontier guardsmen an unusual degree of political latitude was accorded them. In time their deputies sat in the Hungarian diet on terms of equality with representatives of the nobility. The exigencies of prolonged warfare with the Tatar populations attempting to force entrance into the Hungarian plains determined selection of strategical sites as nuclei of original settlements. These facts are responsible for the survival of the Teutonic groups in the midst of Rumanians and Hungarians. To-day the so-called Saxon area does not constitute a single group, but consists of separate agglomerations clustered in the vicinity of the passes and defiles which their ancestors were called upon to defend. The upper valley of the Oltu and its mountain affluents in the rectangle enclosed between the town of Hermannstadt, Fogaras, Mediasch and Schässburg contain at present the bulk of this Austrian colony of German ancestry.

12. The Area of Rumanian Speech

The Germans and Hungarians who founded settlements on the Transylvanian plateau were unable to impose their language on the inhabitants of the mountainous region. Rumanian, representing the easternmost expansion of Latin speech, is in use to-day on the greatest portion of this highland,[60] as well as in the fertile valleys and plains surrounding it between the Dniester and the Danube. A portion of Hungary and the Russian province of Bessarabia is therefore included in this linguistic unit outside of the kingdom of Rumania.[61] Beyond the limits of this continuous area the only important colony of Rumanians is found around Metsovo in Greece, where, in the recesses of the Pindus mountains and surrounded by the Greeks, Albanians and Bulgarians of the plains, almost half a million Rumanians[62] have managed to maintain the predominant Latin character of their language.[63]

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[59] Luxemburg and the regions comprised between Treves, Düsseldorf and Aix-la-Chapelle furnished many German colonists.

[60] N. Mazere, Harta etnografica a Transilvanei 1:340,000, Inst. Geogr. al Armatei, Iasi, 1909.

[61] G. Weigand, Linguistischer Atlas des Dacorumänischen Sprachgebietes, Barth, Leipzig, 1909.

[62] Their number is given at 750,000 by G. Murgoci and P. Papahagi in "Turcia cu privire speciala asupra Macedoniei," Bucarest, 1911. Greek computations, in contrast, rarely exceed the 100,000 figure.

[63] The total number of Rumanians in the Balkan peninsula is estimated at about 10,300,000 individuals, distributed as follows: Rumania, 5,489,296 or 92.5 per cent. of the population; Russia, 1,121,669, of which 990,919 are in Bessarabia; Austria-Hungary, 3,224,147, of which 2,949,033 are in Transylvania; Greece, 373,520; Serbia, 90,000.

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The survival of Latin in an eastern land and in a form which presents closer analogies with the language of the Roman period than with any of its western derivatives had its origin in the Roman conquest of Dacia in the first decade of the second century. Occupation of the land by important bodies of legionaries and a host of civil administrators, their intermarriage with the natives, the advantages conferred by Roman citizenship, all combined to force Latin into current use. When in 275 Aurelian recalled Roman troops from the eastern provinces of the empire, the vernacular of Rome had taken such solid root in Dacia that its extirpation had become an impossibility.

This abandonment of the region by the Romans is invoked for political reasons by the Magyar rulers of Transylvania in order to deny the autochthonous character of Rumanian natives of this Hungarian province. Rumanian historians, however, have been able to demonstrate the untenability of this assumption.[64] Clues offered by geography also tend to validate Rumanian claims.

From the valley of the Dniester to the basin of the Theiss the steppes of southern Russia spread in unvarying uniformity, save where the tableland of the Transylvanian Alps breaks their continuity. The entire region was the Dacia colonized by the Romans.[65] Unity of life in this home of Rumanian nationality has been unaffected by the sharp physical diversity afforded by the enclosure of mountain and plain within the same linguistic boundary. The thoroughness with which Rumanians have adapted themselves to the pecularities of their land is evinced by the combination of the twin occupations of herder and husbandman followed by Moldavians and Wallachians. Cattle and flocks are led every summer to the rich grazing lands of the elevated Transylvanian valleys. In winter man and beast seek the pastures of the Danubian steppes and prairies. Rumanians thus maintain mountain and plain residences, which they occupy alternately in the year.[66] These seasonal migrations account for the intimacy between highlanders and lowlanders, besides affording adequate explanation of the peopling of the region by a single nationality.[67]

There was a time, however, when Rumanian nationality became

[64] A. D. Xenopol, Histoire des Roumains, Leroux, Paris, 1896.

[65] W. R. Shepherd, Historical Atlas. Holt, New York, 1911, pp. 34, 35, 39.

[66] Typical examples of seasonal migration are found in Switzerland, where conditions prevailing in the higher and lower valleys of the Alps have induced the inhabitants to shift their residence with the seasons.

[67] A similar nomadism is observable among the Rumanians of the Pindus Mountains; v. The Nomads of the Balkans: An account of life and customs among the Vlachs of Northern Pindus. By A. J. B. Wace and M. S. Thompson, Methuen, London, 1914.

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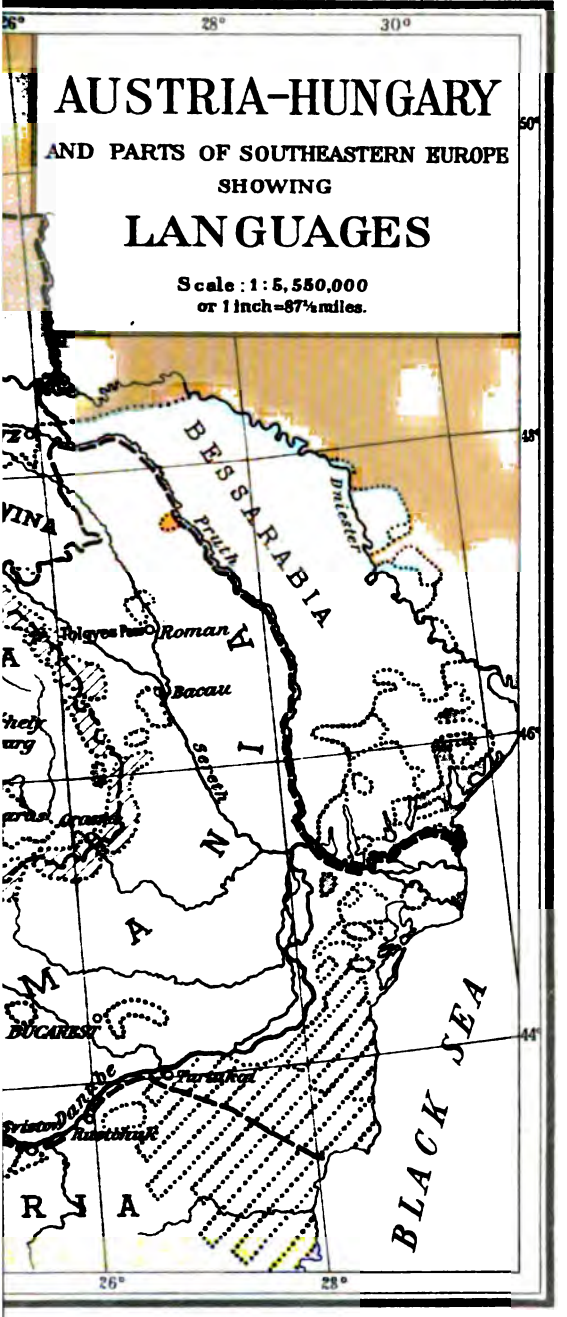
Bull. Amer. Geogr. Soc., Vol. XLVII, No. 6, 1915



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entirely confined to the mountain zone. The invasions which followed the retirement of the Romans had driven Rumanians to the shelter of the Transylvanian ranges. Perched on this natural fortress, they beheld the irruption of Slavs and Tartars in the broad valleys which they had once held in undisputed sway. Only after the flow of southeastern migrations had abated did they venture to reoccupy the plains and resume their agricultural pursuits and seasonal wanderings.

The outstanding fact in these historical vicissitudes is that the mountain saved the Latin character of Rumanian speech. Had the Romanized Dacians been unable to find refuge in the Transylvanian Alps there is no doubt that they would have succumbed to Slavic or Tatar absorption. As it is, the life of Rumanians is strongly impregnated with eastern influences. Oddly enough, its Christianity was derived from Byzantium instead of from Rome, and were it not for a veritable renaissance of Latinism about 1860 its affinity with the Slavic world would have been far stronger in the present century.

13. The Area of Slovene Speech

Of the two groups of southern Slavs subjected to Austro-Hungarian rule the Slovenes are numerically inferior.[68] Settled on the calcareous plateaus of Carniola, they cluster around Laibach and attain the area of German speech, on the north, along the Drave between Marburg and Klagenfurt.[69] Eastward they march with Hungarians and the Serbo-Croat group of southern Slavs. Their southern linguistic boundary also coincides with the latter's. Around Gottschee, however, a zone of German intervenes between Slovene and Croatian dialects. Practically the entire eastern coast of the Gulf of Triest lies in the area of Slovene speech. The group thereby acquires the advantage of direct access to the sea, a fact of no mean importance among the causes that contribute to its survival to the present day in spite of being surrounded by Germans, Hungarians, Croats and Italians.

The Slovenes may be considered as laggards of the Slavic migrations that followed Avar invasions. They would probably have occupied the fertile plains of the Hungarian "Mesopotamia" had they not been driven to their elevated home by the pressure of Magyar and Turkish advances. Confinement in the upland pre-

[68] 1,252,940, Census of 1910.

[69] P. Samassa, Deutsche und Windische in Südösterreich. Deut. Erde, II, 1903, pp. 39–41, which cf. with Niederle's delimitation in La Race Slave, pp. 139–140.

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vented fusion with the successive occupants of the eastern plains which unfolded themselves below their mountain habitations. Racial distinctiveness characterized by language no less than by highly developed attachment to tradition resulted from this state of seclusion.

14. The Area of Serbian Speech

South of the Hungarian and Slovene linguistic zones the Austro-Hungarian domain comprises a portion of the area of Serbian speech. The language predominates from the Adriatic coast to the Drave and Morava rivers, as well as up to the section of the Danube comprised between its points of confluence with these two rivers.[70] Serbian, in fact, extends slightly east of the Morava valley towards the Balkan slopes lying north of the Timok river, where Rumanian prevails as the language of the upland.[71] To the south contact with Albanian is obtained.

The area of Serbian speech thus delimited includes the independent kingdoms of Montenegro and Serbia. Within the territory of the Dual Monarchy it is spoken in the provinces of Croatia, Slavonia, Bosnia, Herzegovina and Dalmatia. The language is, therefore, essentially that of the region of uplift which connects the Alps and the Balkans or which intervenes between the Hungarian plain and the Adriatic.

Union between the inhabitants of this linguistic area is somewhat hampered by the division of Serbians into three religious groups. The westernmost Serbs, who are also known as Croats, adhere to the Roman Catholic faith in common with all their kinsmen, the western Slavs. Followers of this group are rarely met east of the 19th meridian. A Mohammedan body consisting of descendants of Serbs who had embraced Islam after the Turkish conquest radiates around Sarajevo as a center. The bulk of Serbians belong, however, to the Greek orthodox church. Cultural analogies between the Mohammedan and orthodox groups are numerous. Both use the Russian alphabet, whereas the Croats have adopted Latin letters in their written language.

The Serbian group made its appearance in the Balkan peninsula at the time of the general westerly advance of Slavs in the 5th and

[70] Scattered Serbian settlements are also found between the Danube and Theiss valleys as far north as Maria-Theresiopel, and farther south at Zambor and Neusatz. Serbian is the language of the entire district of the confluence of the Theiss and Danube.

[71] Serbian authorities usually extend the zone of their vernacular to points farther east. Cf., J. Cvijić, Die Ethnographische Abgrenzung der Völker auf der Balkanhalbinsel. Petermanns Mitt., 59, I, March, 1913, pp. 113-118.

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6th centuries. A northwestern contingent, wandering along the river valleys leading to the eastern Alpine foreland, settled in the regions now known as Croatia and Slavonia. Here the sea and inland watercourses provided natural communication with western Europe. Evolution of this northwestern body of Serbians into the Croatians of our day was facilitated by the infiltration of western ideas. But the great body of Serbians occupying the mountainous area immediately to the south had their foreign intercourse necessarily confined to eastern avenues of communication. They therefore became permeated with an eastern civilization in which Byzantine strains can be easily detected. In spite of these cultural divergences, the linguistic differentiation of the Croat from Serbian element has been slight.

To-day the political aspirations of this compact mass of Serbians are centered around the independent kingdom of Serbia, which is regarded as the nucleus around which a greater Serbia comprising all the Serbian-speaking inhabitants of the Balkan peninsula will grow. This Serbo-Croatian element is estimated to comprise at least 10,300,000 individuals.[72]

By its situation, the Serbian linguistic area and the rugged land over which it spreads afford a political and physical link whereby connection between problems pertaining respectively to western Europe and the Balkan peninsula is established. The process of nation-forging undertaken by Serbian-speaking inhabitants of southeastern Europe induces a southerly gravitation of Croatians and Bosnians. In opposition to this tendency, artificial forces are exerted at Vienna in order to prevent detachment of the Serbian element in the Dual Monarchy.

15. The Case of Macedonian

Within the Balkan peninsula linguistic groupings now conform to a large extent with the political divisions which ended the wars of 1912-1913. Greater distance in time will undoubtedly afford an increasingly satisfactory perspective of the results which followed this attempt to totally eliminate the Turk from mastery over this portion of the European continent. Racial sifting followed close on territorial readjustments. Turks from all parts of the former Turkish provinces transferred their lands to Christian residents and emigrated to Asia Minor. Special arrangements for this exodus were provided by the Turkish government. Greeks settled in

[72] J. Erdeljanović. Broj Srba i Khrvata, Davidović, Belgrad, 1911.

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the newly acquired Bulgarian and Serbian domain similarly sought new homes within the boundaries of the Hellenic kingdom. A heavy flow of Bulgarian emigrants is at present directed to Bulgaria from Bulgarian-speaking territory allotted to Serbia.[73]

Pressing need of further boundary revision on the basis of language is still felt in the Balkan peninsula. Fear of a resumption of hostilities in this part of Europe is now due principally to the moot case of the nationality of the Slavs of Macedonia. Serbs and Bulgars claim them alike as their own. In reality the Macedonians constitute a transition people between the two. The land they occupy is surrounded by a mountainous bulwark which assumes crescentic shape as it spreads along the Balkan ranges, and the mountains of Albania and the Pindus. For centuries this Macedonian plain has constituted the cockpit of a struggle waged for linguistic supremacy on the part of Bulgarians and Serbs. The land had formed part of the domain of each of the two countries in the heyday of their national life. To this fact the present duality of claim must be ascribed in part.

The language of the Macedonians is likewise transitional between Serbian and Bulgarian. Its affinity with the latter, however, is greater. It is, in fact, sufficiently pronounced to have generally led to its inclusion with Bulgarian. Travelers in the land of the Macedonian Slavs know that a knowledge of Bulgarian will obviate difficulties due to ignorance of the country's vernaculars. Serbian, however, is not as readily intelligible to the natives.

These relations have not illogically weighted the consensus of authority on the Bulgarian side. The result is that compilers of linguistic or ethnographic maps have generally abstained from differentiating the Macedonian from the Bulgarian area.[74] The impossibility for Bulgarians to regard the terms of the Treaty of Bucarest as final are, therefore, obvious. Extension of the Rumanian boundary to the Turtukai-Black Sea line was also an encroachment on soil where Bulgarian was the predominant language.[75]

In its westernmost area the delimitation of a Bulgarian linguis-

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[73] Such migrations generally follow boundary revisions. The crossing of Alsatians into French territory from the year 1870 on has been mentioned in its place above. A large number of Danes likewise abandoned their home in Schleswig-Holstein in 1865 and wandered into Denmark.

[74] D. M. Brancoff, La Macédoine et sa population Chrétienne, Plon, Paris, 1905. The Serbian viewpoint is resumed by J. Cvijić in "Ethnographie de la Macédoine," Ann. de Géogr., XV, 1906, pp. 115–132, and 249–266.

[75] It is estimated that 1,198,000 Bulgarians are still under foreign rule in the Balkans as a result of the treaty of Bucarest. Of these 286,000 live in Rumania, 315,000 in Greece and 597,000 in Serbia. Cf. R. A. Tsanoff, *Jour. of Race Develop.*, January, 1915, p. 251.

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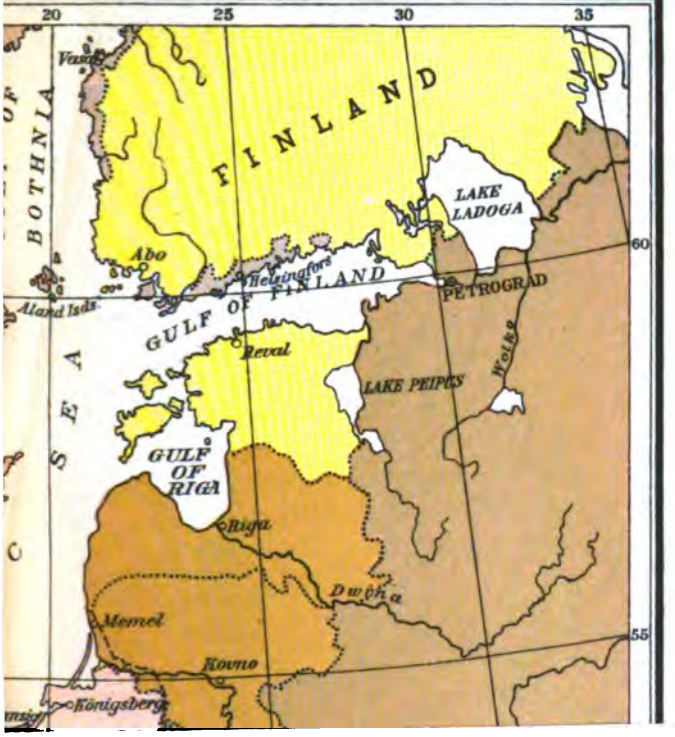

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tic boundary is greatly hampered by the relatively large Serbian-speaking element on the north and a corresponding mass of Greeks on the south. Reliable statistics are still unavailable. The region in which determination of Bulgarian or Serbian linguistic predominance assumes its most complicated phase is found in the quadrangle constituted by Pirot-Nish-Vranja-Prisrend. Here the language of the Slavic natives departs equally from the Bulgarian and Serbian, between which it varies. This region, however, lies north of Macedonia proper. At the same time, there appears to be little room to doubt that the area of Bulgarian speech extends to the zone of the eastern Albanian dialects and that it attains the Gulf of Salonica. But the seafaring population of the Ægean coast is largely Greek except in the sections within Bulgarian boundaries which are now destitute of Greek fishermen.

16. The Area of Albanian Speech

Outside of Macedonia a Balkan zone in which political and linguistic boundaries fail to coincide existed until recently in southern Albania. The frontier of this principality with Greece had been extended into a region in which Greek was undoubtedly spoken by the majority of the inhabitants.[76] The Hellenic government, taking advantage of disturbances in Albania and the European war of 1914, despatched troops in the territory claimed by its citizens. As a result of this invasion, the Albanian area of Greek speech is at this writing under Greek military occupation.[77]

The inhabitants of Albania are utterly devoid of national feeling. The formation of this independent state was a purely political move undertaken by Austrian statesmen to prevent expansion of Serbia to the Adriatic. Within the boundaries determined by the Ambassadorial conference held in London in 1913, strife and dissensions prevail to-day as intensely as during the Turkish régime. Natives of the northern sections of the country speak Serbian dialects and are inclined to favor union with Serbia or Montenegro rather than independence. Malissori tribesmen fought side by side with Montenegrin troops in the fall of 1912, while the Albanians of Ipek gave assistance to Turkish regulars. The inhabitants of the valley of the upper Morava sent supplies to Serbian troops against which the chieftains of central Albania led their men. The purest type of Albanian found in the vicinity of Elbassan, Koritza and

[76] R. Hüber, Carte Statistique des Cultes Chrétiens. 1:600 000. Baader & Gross, Cairo, 1910.

[77] L. Büchner, Die neue griechisch-albanische Grenze in Nordepirus. Petermanns Mitt. LXI, 1915, February, p. 68.

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Avlona[78] is practically submerged in a sea of Greeks. Under these circumstances, partition of the country between Greece and Serbia might not be incompatible with native aspirations. Departure from linguistic differentiation in this case would probably be attended by political stability which could not be provided in any other manner.

17. Conclusions

Certain inferences engage attention in this study of linguistic areas. Inspection of the map of Europe prepared for this article suggests strikingly that zones of linguistic contact were inevitably destined by their very location to become meeting-places for men speaking different languages. They correspond to the areas of circulation defined by Ratzel.[79] The confusion of languages on their site is in almost every instance the result of human intercourse determined by economic advantages. In Belgium after the Norman conquest the burghers of Flanders were able to draw on English markets for the wool which they converted into the cloth that gave their country fame in the fairs of Picardy and Champagne.[80] We have here a typical example of Ratzel's "Stapelländern" or "transit regions." In a cross direction the traffic of the Rhine ran at the end of the 12th century from Cologne to Bruges along the divide between French and Flemish. Lorraine, inviting access from east and west, is known to historians as a Gallo-Germanic market place of considerable importance.[81] In our own time the river trade between Holland and Germany along the Rhine has caused expansion of Dutch into German territory as far as Wesel and Crefeld. The intruding language yields, however, to German everywhere.[82] Prevalence of French in parts of Switzerland is generally ascribed to travel through certain Alpine passes.[83] The penetration of German in the Trentino has already been explained. In Austria the entire valley of the Danube has provided continental trade with one of its most important avenues. I have called attention in a former article to the Balkan peninsula as an intercontinental highway.[84] In a word, language always followed in the wake of trade and Babel-like confusion prevailed along channels wherein men and their marketable commodities flowed.

78 G. Gravier, L'Albanie et ses limites. Rev. de Paris, January 1, 1913, pp. 200-224.

79 F. Ratzel, Politische Geographie, 2nd. ed. Oldenbourg, Munich, 1903. Cf. chap. XVI "Der Verkehr als Raumbewältiger," pp. 447-534.

80 R. Blanchard, La Flandre, Colin, Paris, 1906.

81 J. Vidal de la Blache, Étude sur la Vallée Lorraine de la Meuse, Colin, Paris, 1903, pp. 165-180.

82 Cf. inset on pp. 63-64, Andree's Handatlas, 6th ed., 1915.

83 J. Brunhes, La Géogr. Humaine, Alcan, Paris, 1912, pp. 593-599.

84 The Balkan Peninsula, Bull. Amer. Geogr. Soc., Vol. 45, No. 8, 1913.

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The history of Europe during the 19th century shows clearly that modern reconstruction of nationalities is based on language. Practically all the wars of this period are the outcome of three great constructive movements which led to the unification of Germany and of Italy as well as to the disentanglement of Balkan nationalities. These were outward and visible signs of the progress of democratic ideals. The congress of Vienna failed to provide Europe with political stability because popular claims were ignored during the deliberations. At present inhabitants of linguistic areas under alien rule are clamoring for the right to govern themselves. The carrying out of plebiscites under international supervision can be relied upon to satisfy their aspirations and serve as a guide to frontier rearrangements.

All told, the growing coincidence of linguistic and political boundaries must be regarded as a normal development. It is a form of order evolved out of the chaos characterizing the origin of human institutions. The delimitation of international frontiers is as necessary as the determination of administrative boundaries or city lines. Human organization requires it and there is no reason why it should not be undertaken with a fair sense of the wishes and the feelings of all affected.

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Charles C. Eberhardt

Indians of Texas

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TYPE OF INDIAN OF THE PERUVIAN REGION

Hipurina man, 22 years old, from Acre District, Brazil

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INDIANS OF PERU[1]

By CHARLES C. EBERHARDT
American Consul at Iquitos, Peru

(With Two Plates)

Introduction

The difficulty experienced in obtaining reliable information relative to conditions in general in the region about Iquitos, leads me to believe that the results of certain studies I have made regarding the Indians of Peru may be of some value and interest to others.

I had hoped to make a more thorough study of this interesting subject from actual observation among the different tribes, obtaining specimens of their weapons of warfare, their clothing, utensils, etc., but ill health has prevented any systematic work along these lines. I have been fortunate, however, in having been able to make several trips among different tribes with Mr. George M. von Hassel, thus gaining first hand a limited amount of information on the subject, but the greater part comes from Mr. von Hassel himself, who, it seems to me, is probably one of the best authorities on the subject and one highly qualified to speak regarding these Indians. Mr. von Hassel has had long experience in the interior of Peru. During the last ten or twelve years he has lived for months at a time with various tribes, speaks the Quechua language and many other dialects, and by gaining their confidence has been able to mingle freely with the Indians, gaining an insight into their customs, methods, and manner of living such as few white men have enjoyed.

The accompanying photographs were taken by the French explorer Robushon, who spent a number of years among different tribes. Among his experiences was his romantic marriage with an uncivilized Indian girl, whom he met in the forest one day roaming about entirely nude and alone, her father and mother and others of the tribe of which she was a member having died of some pestilence.

[1] Consular report to the Department of State, transmitted to the Smithsonian Institution by the Department. Dated Iquitos, Peru, November 30, 1907. Slightly abridged and several illustrations omitted.

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He took her to France, where she was educated, and she returned to this country a few years later thoroughly conversant with three languages and assumed, with credit to herself, a place in local society among the best families here. Mr. Robushon undertook another trip in a wild part of the Upper Putumayo district about two years ago. He has never returned, and searching parties which have been sent out have been unsuccessful in their efforts to find him. It seems most probable that he was killed and eaten by some of the cannibal tribes of that region.

Owing to the difficulty of obtaining authentic data as to population, due allowance must be made for the estimated number of inhabitants of the Department of Loreto (in which Iquitos is situated), 120,000, and that of trans-Andean Peru, 300,000. Of this latter number one-half, or 150,000, are said to be wild Indians, most of whom, aside from petty tribal wars, are peaceably inclined, obtaining food and such raiment as they require from the supply furnished by a generous and lavish nature.

Enumeration of Tribes

Following is a list of the principal tribes which go to make up this total of 150,000, with the approximate number of inhabitants of such tribes as are said to number more than 2,000, though names of smaller tribes and subtribes almost without number could be added. The total of these numbers is 116,000, and the difference, therefore, 34,000, comprises such tribes as those whose number of inhabitants does not appear on the list and which are composed mostly of from 200 to 1,000 souls each. Some of these tribes are said no longer to exist as such, having become extinct by intermarriage with other tribes, taken prisoners by stronger tribes and the whites, or dying from diseases introduced by the white man, usually smallpox.

In the spelling of these names one will detect at once the Spanish style, which has been given to the words as pronounced by the natives themselves, and as there is always considerable difference in accent, enunciation, etc., of different individuals in the pronunciation of the same word, one often meets with several ways of spelling the name of a certain tribe. Most of the tribes retain the name handed down for generations, though others are known by the names of the rivers or vicinity in which they live, being thus designated by the rubber-gatherers or the whites with whom they come in contact.

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Principal Indian Tribes of Peru

Tribe	Number
Huitotos	
Gellas	
Emuirises	
Spunas	
Ucheruas	20,000
Onocaises	
Sebuas	
Nongonis	
Comeyones	
Sigayor	
Miralles	
Bonanisayes	
Casabes	
Caidullas	
Lunas	
Yaramas	
Munjoses	
Conroy	
Ayafas	
Achotes	
Cuyubos	13,000
Canines	
Yanis	
Minicuas	
Miretas	
Chontaberis	
Cheseyes	
Tamas	
Herayes	
Tayajenes	
Guipi	
Angoteros	2,000
Orejones	2,000
Rosainos	
Inji-Inji	
Muratos	7,000
Andoas	
Iquitos	
Itatos	
Huambisas	2,000
Batucos	
Antipas	
Aguarunas	2,000
Jeberos	
Cayapas	
Cahuapanas	

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Tribe	Number
Cocamas	2,000
Nautinos	
Ocayos	
Cocamillas	
Lagunas	
Omaguas	
Mayorunas	
Capanahuas	3,000
Nahuas	2,000
Shipibos	
Shetibos	
Conibos	
Remos	
Sacuyas	
Amueshas	
Piros	
Amahuacas	7,000
Yurimaguas (now extinct.)	
Yaros	
Pamaris	3,000
Yamamadis	2,000
Hipurinas	2,000
Pacahuaras	2,000
Mojos or Muzos	6,000
Arahunas	2,000
Capahenis	
Campas	15,000
Machigangas	
Campas (pure)	
Campas Bravos	
Cashibos	
Chonta-Campas	
Pangoas	
Cumaticas	
Cotangos	
Pucapacuris	
Mashcos	6,000
Mashco-Piros	
Sirineiris	
Moenos	
Huachipairis	
Amajes	
Tuyneiris	
Andoques	2,000
Araizaires	
Huarayos	3,000
Yamiacos	
Tiatinaguas	
Atsahuacas	
Pacahuaras	2,000

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Tribe	Number
Chacobas	
Amigos or Inaperis	
Huaparis	3,000
Boras	3,000
Cachiboyanos	
Ticunas	3,000
Yuminaguas	
Yahuas	
Pebas	
Zaparos	
	116,000

Brief Descriptions of Tribes

Brief sketches of the manners and customs of a few of the stronger of these tribes may be of interest before a general summary is made.

The Huitotos

The Huitotos, together with their subtribes, are considered the strongest in point of numbers of any of the Indians of Peru. They inhabit the district of the Upper Putumayo River (called Içá in Brazil) and the regions between that river and the Yapurá, or Upper Caquetá, on the north and as far south as the vicinity of the Napo River. The greater part of these are inclined to treat with the whites, and several thousands of them are employed by rubber-gatherers. They speak a distinct language and use the lance and club as weapons, while stone axes are to be found among some of the tribes of the central regions. As is usual with Indian tribes generally, the women do most of the domestic drudgery and hard labor. It is a common sight to see a mother with a babe at her breast bringing in a supply of yucca for the noonday meal in a reed basket hung from her head down her back.

The houses in which they live are not unlike huge circus tents in shape, constructed of poles covered from peak to ground with a thatching of palm leaves. In one of these houses it was estimated that 150 persons were living at the same time. Each family is allotted a triangular space of about 12 feet, and at each point of the triangle poles are erected, from which their hammocks (made of woven reeds) are hung, while in the center of the triangle the cooking for the family is done over a small fire. The rougher work of crushing the yucca, etc., is carried on in the open space in the center of the house, though this space is free to all and is always used for their dances and other celebrations.

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The Campas

Though less numerous than the Huitotos, the Campas, with their subtribes, numbering in all some 15,000, are much the more intelligent and in many respects the most interesting of any of the tribes of Peru. They inhabit the vast region from Rosalina, on the Upper Urubamba, to the junction of that river with the Tambo, and from that point the left bank of the Ucayali as far as the Pampas del Sacramento. All of the subtribes speak the Campa dialect and generally wear the traditional *cushma,* a sort of sleeveless shirt, crudely woven from the wild "cotton" which grows in abundance on a large tree in those regions.

The Chonta-Campas and the Cashibos are the least advanced of the subtribes, and still use the light bark of a certain tree for the scant covering they wear when any is used at all. They are generally hostile to the whites and at times have been known to eat human flesh, believing that by so doing they imbibe the strength, physical and intellectual, of their victim. The Cashibos are almost continually at war with the neighboring subtribes. They inhabit the region of the Pachitea and Pampas del Sacramento. They number approximately 3,000, though the continual intertribal wars and frequent excursions of the whites into their territory in quest of workers (when, if resistance is shown, they are often taken by force and practically enslaved) are causing a steady decrease. Men and women alike go naked or use the bark of the tree in the form of a long shirt, as above mentioned. Because of the isolation of their position, the machete and other arms so commonly used by other tribes are almost unknown to them, and they still use, as they have for centuries past, the stone axe and the bow and arrow, and defend the entrance to their homes by concealing sharpened spears in pitfalls.

The Indians of the head tribes of the Campas are generally of rather noble features, friendly to the whites and willing and quick to learn their habits and customs. They are excellent canoeists, learn readily the use of firearms, and are sometimes employed in rubber-gathering. They spin and weave and cultivate quite extensive tracts of corn, yucca, bananas, peppers, and a species of potato.

The Machigangas, another subtribe of the Campas, live in the Upper Urubamba and Pachitea districts, and with few exceptions are friendly toward the whites. They are rather small of stature, with regular features, and men and women alike wear the *cushma.* They are polygamists. Their numbers are also steadily decreasing,

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as is the case with all the wild tribes, through fevers, smallpox and attacks by neighboring tribes. From their language and customs they show that they must have been in contact with the ancient Incas, though not entirely assimilated. They worship in their manner the sun and moon, believe in witchcraft, and besides their own language speak the Campa dialect.

The Chonta-Campas are distinguished from others of the Campa subtribes by a small piece of wood about an inch long which they wear pierced through the upper lip. Some also wear such a decoration from the lower lip and a metal pendant from the nose and tattoo their faces with blue penciling.

The Aguarunas

The Aguarunas number approximately 2,000, inhabit the Marañon River district below the Cahuapanas River, have their own language and laws, believe in a good and a bad god as well as in witchcraft, and are polygamists. They use the lance and blow-gun with poisoned arrows. They are of medium stature, very muscular, with regular features, and some of the women are quite beautiful. They engage extensively in cultivating the natural products of the country. This tribe, in civilization sometimes designated "Head-hunters," has the gruesome custom of preparing human heads in a manner by which, though reduced to about one-fifth their natural size, they retain the same shape throughout that they possessed during life, and in a seemingly mummified, diminutive head thus prepared, can easily be recognized the features of the individual when alive. This custom originated in preparation of the heads of the enemies of the tribe who fell victims to them during their wars and which were kept as trophies. The head was cut from the body and placed on a pole, where it was allowed to remain several days till decomposition had fairly set in. A vertical cut was then made in the cranium and the bones deftly removed in such a manner that only the thick cuticle remained. The inside of the head was then burned and seared with hot stones and afterwards allowed to smoke in a flame from the burning roots of a certain species of palm. This flame is said to act much the same as salt on the parts exposed, and by the process described the head is made much smaller in size. Specimens of these heads became so much in demand a few years ago for museums, etc., that a premium seemed to be thus placed on the heads of persons venturing in the vicinity of this tribe, and many murders resulted. The Peruvian government has now forbidden the practice, and the specimens becoming more scarce are

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commanding higher prices. I have known of them selling for $150 to $200 in gold, and rather a poor specimen was recently sold in Iquitos for $80. In the Rio Negro and Orinoco regions there is said to exist a tribe which prepares entire bodies in this manner, and in the Putumayo district they are said to retain in natural size, by a system of smoking, the hands of enemies slain in battle. I have seen teeth, shin bones, and other parts of skeletons thus treasured.

The Aguarunas, in common with several tribes, also make use of certain poisons, both in their wars and in hunting. The poison is extracted from different species of vegetables and plants and prepared by the women and old men of the tribe. It has the peculiarity of killing game without giving any evil effects to one who may eat the flesh. Another poison is scattered over the surface of a pool where fish are known to gather, and great numbers of them are killed in this manner. The small fish, being able to withstand the effects of the poison for only a short time, rise to the surface first, and later the larger ones, though only the latter are taken. There is thus a vast waste, and though this form of fishing is prohibited by law, it is by no means stopped. The Indians of the Putumayo use in their wars a kind of poison which has the peculiarity of producing putrefaction almost as soon as the wound is made.

The Huichipairis

These Indians, united with neighboring tribes, have resisted to this day the invasion of the whites and remain hostile. They live in the Upper Madre de Dios district, are very muscular, both men and women, though not large of stature. The naturally fierce aspect of the men is heightened by the custom of perforating the upper lip, through which a piece of wood, feather or shell is inserted and worn. They have a language of their own, but many of them understand the Quechua and Campa dialects, the latter being introduced by the women of the Campa tribes, whom they are continually stealing.

The Inji-inji

Five hundred souls, the remnant of what was once a powerful tribe, go to make up all that now exists of the Inji-inji Indians, who live along the small streams and branches of the Curaray River. They are the lowest of the Peruvian Indians, both in manner of living and in the progress they have made. They use stone axes for breaking down the trees when small clearings are needed in which to plant corn and yucca. They are not hostile to the whites, but avoid as much as possible any contact with them.

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TYPE OF INDIAN OF THE PERUVIAN REGION

Hipurina girl, 18 years old, from Acre District, Brazil

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The Nahumedes

This tribe, now almost extinct, is remarkable only for the tradition which clings to it of having been responsible for the naming of the great Amazon. It was they who attacked the Spaniard Arellano on his journey down the great river after he had deserted the Pizarro expedition. The Indians, because of their *cushmas* and the manner of wearing their hair flowing loosely down their backs, were thought to be women warriors or "amazonas," and from that incident, as history also asserts, the river has retained to this day the name of Amazonas.

The Orejones

This name is given to the tribe which inhabits the Napo and its branches, from the fact of their enlarging the lower part of the ear by a process which is begun when they are children, until sometimes the ear hangs down almost to the shoulder. This custom is attributed by some to the Incas, who in this manner indicated the families and descendants of Incas of "royal" blood.

The Tribes as a Whole

The average traveler through the Amazon lowlands would probably notice little difference between the various tribes further than that some wear the *cushma,* others a short covering from waist to knees, and others go entirely nude. Several reasons are apparent by which the Indians have been driven to wear clothing at times: First, the moral; second, climatic conditions, such as cold in the mountainous regions, and third, the abundance of flies, mosquitoes, and other insects which abound in a hot country.

The student would immediately note other differences, probably the first and one of the important ones being that in the regions on the right bank of the Amazon, from Urubamba and Ucayali to the Marañon, all the Indians, with the exception of the Aguarinas, use the bow and arrow, while those on the left bank use the lance and blow-gun with poisoned arrows. These and many other items in detail would probably be interesting, but there has been no opportunity for systematic study of the subject, so general information regarding the Indians of Peru is all that can be furnished.

Form of Government

All of these tribes of Indians seem to be aggregations of numerous families, with one leader or chief, who is recognized as such by all the tribe. Among these families are subtribes, which in turn have their leaders or subchiefs, though the entire group in that

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vicinity are under the head tribe. For example, the Aguaranas, who, because of their superior culture rule over several smaller tribes, and each of these subtribes has its head man, or *Curaca,* but owe no allegiance whatever to each other; in fact, they often war with each other without interference from the head tribe. They rarely unite to fight a common enemy, which fact has been largely responsible for their condition today, as they have not been strong enough in their scattered condition to repel the invasion of the rubber-gatherers.

Languages

For the most part these tribes speak independent languages, with many dialects. Some of the tribes count as high as five, a very few even to ten, but the most of them use only the fingers in expressing numbers greater than one.

Houses

Excessive rains have made living under some sort of shelter compulsory, and as a result, even during their wanderings in the forests, rude shacks of poles covered with a thatching of palm leaves are hastily constructed, though their permanent abodes are often very cleverly and strongly built of the same materials.

Food

The Indians of Peru subsist almost entirely on the yucca, bananas, corn, fish, and the flesh of birds and game from the forests. Stones and hardwoods are used for grinding and crushing, and earthenware pots, etc., are used for boiling, roasting, and frying. In only a few localities is salt to be found, and even then it is generally used in a mixture with hot wild peppers. Some of the tribes that live on the Amazon and Ucayali eat earth from certain deposits (known by the Inca word *kulpa*) which contains a proportion of salt. Wild animals also seek these deposits. This scarcity of salt and the natural craving of the system for this mineral have been the means of making the eating of this earth a vice similar to the cocaine or opium habit. When taken in such quantities the stomach of the individual becomes much distended and death eventually results from it.

The rather insignificant looking yucca, a shrub which grows ordinarily to a height of from four to six feet, is probably the most practical and useful of all the vegetal products of this region. The root of this plant, which resembles somewhat our sweet potato, is really the "staff of life" for the average Indian household. Baked, it

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serves as a substitute for bread; fried or boiled, it is as good as our potato; kneaded into a dough and baked with minced meats, fruits, etc., it makes a splendid pastry, while the juice, after treatment by certain processes, is made into *masato,* the beverage common to nearly all the tribes of Peru. To make this drink, baked yucca, crushed and ground till it forms a sort of a meal, is placed in earthen jars, mixed with the raw article likewise crushed (or sometimes chewed by the Indians till, mixed with saliva, a considerable portion is liquid), which serves to ferment the mixture, thus producing a greater or less amount of alcohol. The preparation of this drink is usually the occupation of the older women. Great quantities of it are drunk at the celebrations of marriage ceremonies, births, the beginning of a tribal war or at its successful termination. On journeys a certain amount is always carried, which, mixed with water, furnishes a very refreshing drink. The juice of the banana, prepared in more or less the same manner and mixed with water, is also refreshing.

Physical Characters

In the color of his skin the pure-blooded Indian of Peru is practically the same dark brownish color as the North American Indian. The most of the tribes, however, seem to have become mixed at some time or other with whites or blacks, and many variations in color are therefore to be noted, from the very dark tribes of the Putumayo, in whom may be traced strains of blood of escaped negro slaves from Colombia and Brazil, to the very light Huarayos of the Madre de Dios, of an ancestry of mixed Indian and Spaniard. In stature they may be said to be below the average in height, though usually very stockily built, and strong and muscular.

Mental Traits

When brought from their native haunts into contact with civilization, these Indians are as a rule very quick to adopt the customs of the whites. It is admirable to see the manner in which they learn in a short time to use firearms. As pilots on the smaller boats plying the tributaries of the Upper Amazon many are rendering excellent service, while the crews are often made up entirely of men born and reared in the wilderness. A few of the more aggressive have become shrewd business men and wealthy exporters of rubber.

Polygamy

All of the tribes of this region practice polygamy, a man's standing and wealth being determined by the number of wives he may have, though this number rarely exceeds ten, the wives ranging

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in age from ten years to fifty years. A man's wives are obtained from among the women of his own tribe, or by barter or theft from neighboring tribes. Thus a number of wives, one the favorite for a longer or shorter period, will live together in one household with very little jealousy or quarreling. They are submissive, attend to all the duties of the household, also work in the small fields of yucca, corn, etc., and usually accompany the men on their journeys into the forests.

Diseases

In addition to the violent deaths from the many tribal wars and attacks by the whites, certain diseases are proving an alarmingly great factor in reducing the population of the Indians of Peru. Probably chief among these is the viruela, or smallpox, unknown among them till after the coming of the whites, and entire tribes have been known to perish from epidemics of this disease, to which they seem peculiarly susceptible. In the mountainous parts of the country some die of pneumonia, and there is always a considerable number of deaths from malaria and other tropical fevers. Beri-beri, or elephantiasis, a swelling of the legs, is also quite common in certain districts, and among the Aguarunas epilepsy has been known to exist at times.

Medicines

Contrary to the popular belief that Indians in general have a wonderful knowledge of the value of herbs, plants, roots, etc., for medicinal purposes, very little is known or pretended to be known among the Indians of Peru. For fevers of all kinds they commonly use a species of tea made from Peruvian bark, and a mixture of quinine and the leaves of a certain shrub made into a poultice is placed upon wounds. In case of snake bite the blood is immediately sucked from the wound or the wound seared with a burning stick. Those who use firearms place powder on the wound caused by the bite, which is then set afire in the attempt to burn out the poison. When one is attacked by some unknown form of disease he is supposed to have been taken possession of by an evil spirit, and for his relief the Aguarunas, for example, use oaths and prayers by which they hope, through threats or entreaties, to free the victim from the malady.

Cannibalism

Cannibalism is practised by members of certain tribes of the Putumayo River district, who not only enjoy the flavor of human flesh well prepared, but also believe that they partake of the strength, both physical and intellectual, of their victims. Prisoners of war

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are most always disposed of in this manner, amid great festivity, the prisoner always having been allowed for days previous all the food and delicacies of the village that he can consume, in order that he may become properly fattened. The indifference which these prisoners display toward the fate that awaits them, even when they know the exact time of their doom, is remarkable. They eat great quantities of all that is given them, that they may make the better feast for their captors, perform duties as slaves, often going unaccompanied for considerable distances from the place of captivity and returning without attempting to escape. When the day for the feast arrives the victim is brought to the center of the village, tied to a beam, and some one of the tribe who may have lost a relative in a war with the tribe of which the victim is a member, or perhaps had a brother eaten by them, is allowed to perform the execution. With a stone axe in his hand he addresses his victim, reminding him that his (the executioner's) brother was sacrificed in a similar manner by the tribe of the victim, that he died without a moan or sign of pain, that he was therefore one of the most valiant of his tribe, that the assembled relatives and friends of the dead warrior would now have the opportunity of seeing if the victim could die as bravely and unflinchingly. After this address the victim's skull is crushed with the axe, sometimes the unfortunate showing marvelous strength and determination in receiving several blows without a groan before he falls. Immediately after the execution the body is cut up and the feast indulged in. Among the Amahuacas the custom of burning the bodies is said to exist, and the charred bones are crushed or ground and afterward used as a flavor for their meals.

Slavery

In various works written on Francisco Pizarro's conquest of Peru we read that in character the Indians at that time were not at all warlike, that their natural tendencies were toward husbandry and agriculture rather than war, which rendered Pizarro's advance much less perilous, and with a few notable exceptions their complete submission was comparatively easily brought about, nothing like such difficulties having been experienced by the Spaniards as was the case with Cortés in Mexico. This same trait of character is discernible in their descendants, who seem to expect no better fate than to become the servants of some *padron,* whom they serve submissively, with but little complaint. Their songs, so characteristic, are indeed well named *tristes* (literally "sadnesses"), and when heard on a dark night about a campfire in the stillness of an Amazonian forest, their

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pathetic wail or lament seems the climax of all the sadness and pathos of their four centuries of servitude.

The average Peruvian would no doubt show resentment at the statement that slavery exists in Peru, yet such is in reality the case with most of the Indians who come in contact with the whites. For the greater part, however, they are not treated harshly, and in their submissive way, with enough to eat and drink, seem to be contented and probably as well off as when roaming the woods. Their condition might be termed a system of peonage. The Indians enter the employ of some rubber-gatherer, often willingly, though not infrequently by force, and immediately become indebted to him for food, etc. According to Peruvian law a person so indebted to another can be held and obliged to work till that debt is paid, and in these instances the employer sees to it that the employee never receives sufficient wages to extinguish his indebtedness, and he is therefore always practically a slave. By paying off this indebtedness a person may obtain the servant, who in this way becomes similarly the slave of him who pays the debt. However, the scarcity of labor and the ease with which the Indians can usually escape and live on the natural products of the forest oblige the owners to treat them with some consideration. The Indians realize this, and their work is not at all satisfactory, judging from our standards. This was particularly noticeable during a recent visit I made to a mill where *cachassa,* or aguardiente, is extracted from cane. The men seemed to work when and how they chose, requiring a liberal amount of the liquor each day (of which they are all particularly fond), and if this is not forthcoming or they are treated harshly in any way they run away to the forests. The employer has the law on his side, and if he can find the runaway he is at liberty to bring him back, but the time lost and the almost useless task of trying to track the Indian through the dense forests and small streams makes it far the more practical that the servant be treated with consideration in the first place.

Through intermarriage with the whites, disease, and wars, the Indians of Peru are rapidly disappearing, and I am told that statistics compiled for a given period during recent years show that their numbers are diminishing at the rate of five per cent per annum; that in twenty years the wild Indians of the Upper Amazon will have disappeared almost entirely, and it seems only a question of time when the dying tribes of South American Indians must meet the fate of their brothers of North America, and the two in common, once the rulers of two continents, become only scattered remnants of their former greatness, if not entirely engulfed by the wave which seems sweeping over them.

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ARCHITECTURE, though it chronicles history in stone, has not hitherto been assigned its proper place in education, and this has doubtless been due to the erroneous idea that the public could not grasp the constructive principles which govern architectural forms. A study of Architecture applies a key to the habits, thoughts, and aspirations of each period, and, without a knowledge of the art, history lacks that human interest with which it should be invested. Architecture has always had worshippers at her shrine

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3. EXAMPLES.

4. COMPARATIVE ANALYSIS.
   - A. *Plan*, or general distribu of the building.
   - B. *Walls*, their construction treatment.
   - C. *Openings*, their character shape.
   - D. *Roofs*, their treatment development.
   - E. *Columns*, their position, st ture, and decoration.
   - F. *Mouldings*, their form decoration.
   - G. *Ornament*, as applied general to any building.

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In treating of the buildings themselves the author has endeavoured to a long descriptions, which are necessarily technical and intolerably dry, difficult to follow, even by those who have had the technical training and either the building or complete drawings of it before them. He has there provided the largest possible number of illustrations, and has confined the to brief, but it is hoped vivid, notes of the special qualities and characteristic the building referred to.

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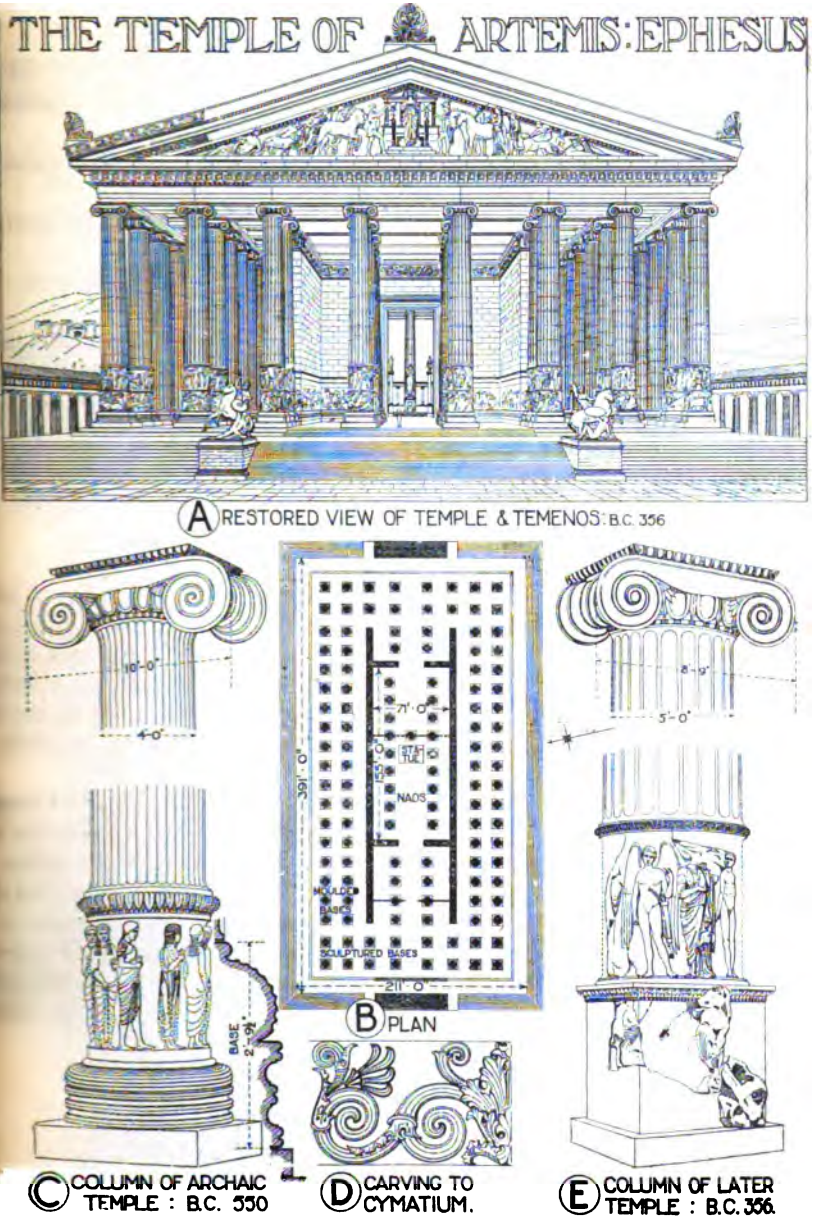
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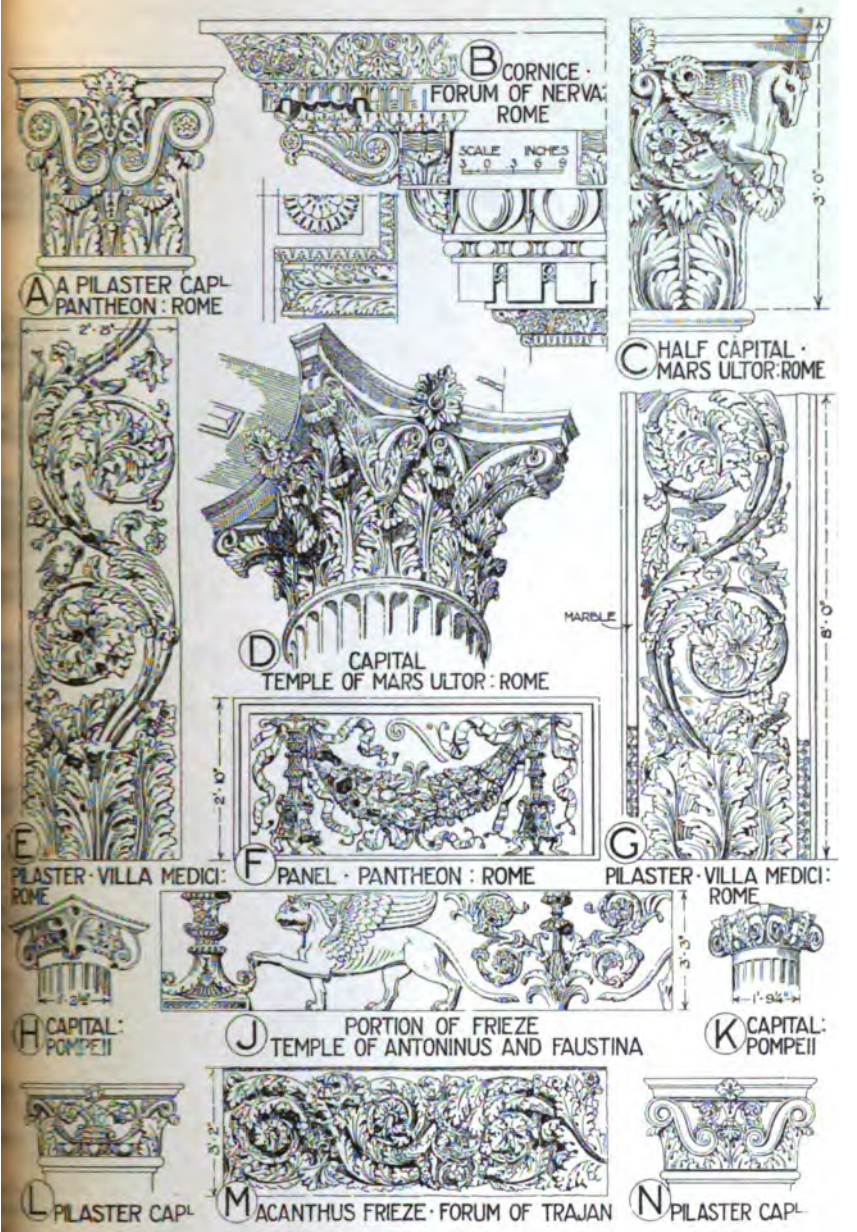

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BYZANTINE ARCHITECTURE

A. S. Irene, Constantinople

B. S. Vitale, Ravenna, with Tomb of Galla Placidia in foreground

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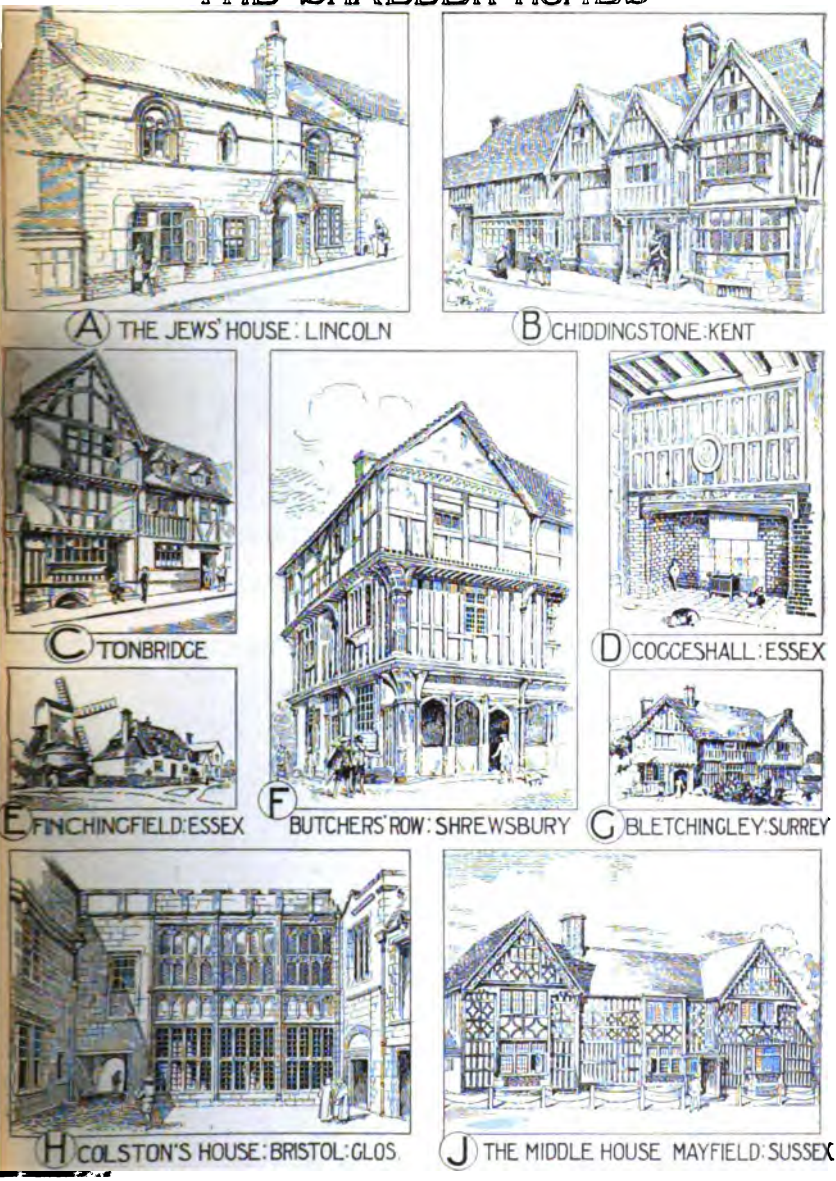
ENGLISH MEDIÆVAL ARCHITECTURE

THE SMALLER HOMES



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FRENCH GOTHIC

A. CHARTRES CATHEDRAL FROM N.W.

B. INTERIOR LOOKING E. C. INTERIOR LOOKING W.
CHARTRES CATHEDRAL

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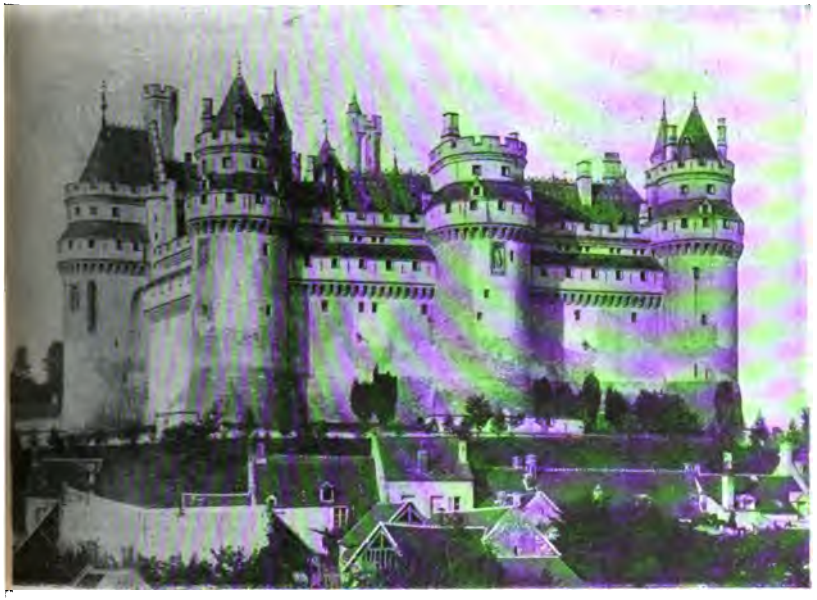
FRENCH GOTHIC

A. House of Jacques Cœur, Bourges: The Courtyard

B. Avignon: Town Walls, showing machicolations



C. Château de Pierrefonds

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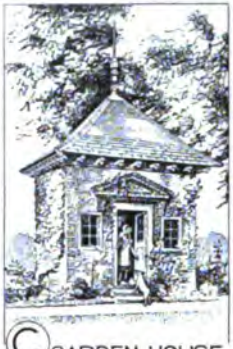
ENGLISH RENAISSANCE

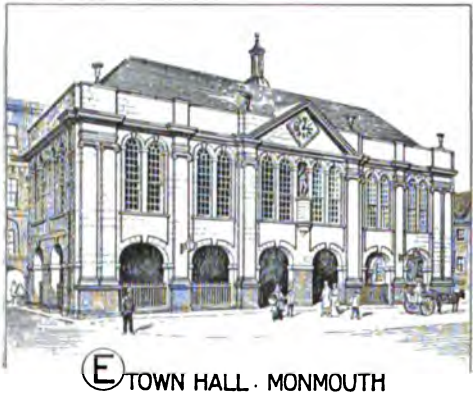
A MORDEN COLLEGE : BLACKHEATH : KENT

B BUTTER MARKET
BARNARD CASTLE : DURHAM



C GARDEN HOUSE
POUNDISFORD PARK : SOM.

D BUTTER MARKET
BUNGAY : SUFFOLK



E TOWN HALL . MONMOUTH

F TOWN HALL : ABINGDON : BERKS

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SPANISH RENAISSANCE

A. Façade of Church.

B. Nave looking E.

The Escurial, near Madrid

C. Notre Dame del Pilar, Saragossa

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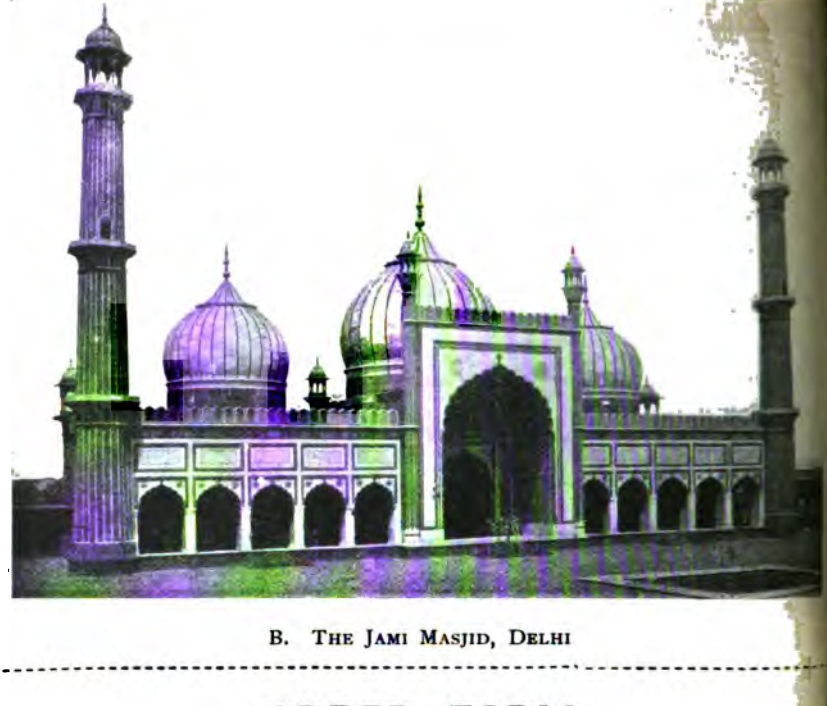
INDIAN SARACENIC



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GEOGRAPHICAL ASPECTS OF THE CHANNEL TUNNEL

Sir FRANCIS FOX, M.INST.C.E.

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(*From 'The Geographical Journal' for August*, 1917)

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GEOGRAPHICAL ASPECTS OF THE CHANNEL TUNNEL*

Paper Read by Sir Francis Fox, M.Inst.C.E.

At the Meeting of the Royal Geographical Society, 23 April, 1917.

HAVING been invited by your President to address the Royal Geographical Society on the "Geographical Aspects of the annel Tunnel," I will do my best to lay before you some of the leading tures of the case. It will be desirable at the outset very briefly to er to the geological and engineering aspects of the question, in order t I may be able to make the general position intelligible to all.

First, as to geological considerations, upon which depend the initial ccess or failure of the undertaking. The problem is very different from t of tunnelling between Great Britain and Ireland, where the difficulties , I think, insurmountable owing to the fact that such a tunnel would ve to be about 600 feet below the level of the Irish Sea.

In the case of the Channel tunnel however the proposal would be ogether different, and much more favourable, inasmuch as it is an ablished fact that England and the Continent at one time formed con- uous land, and that the geological strata on both sides of the English annel are identical. The beds, their thickness, the dip, the formation, similar in all respects; and the outcrops of the various strata have en carefully and correctly surveyed by several thousand soundings and rings, made over the entire distance between England and France.

In bygone geological ages a great river flowed along the line of what now the Channel. On the Admiralty chart of the Channel there will found a very remarkable ravine north of Guernsey, called the "Hurd ep" or "La Grande Fosse." This ravine in the sea-bed extends for istance, from east to west, of about 75 miles with an approximate width 3 miles.

The depth of the British Channel north and south of "La Grande sse" averages from 34 fathoms to 35 fathoms, but the soundings in the ine itself rapidly increase until they reach 110 fathoms. This ravine othing less than the remains of the great river of past geological ages, ch was an active agent in eventually separating the two countries.

The white chalk cliffs of England and France in the neighbourhood ape Grisnez rest upon a lower bed of Grey Chalk, "the Cenomanian," e 200 feet in thickness; and this in its turn lies upon a solid bed of t. Both beds are very suitable for tunnel construction, being almost

* *From 'The Geographical Journal' for August*, 1917.

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if not wholly impervious to water, the mixed material of which they are constituted bearing a close analogy to that employed in the manufacture of Portland cement. The Electrical Tube Railways of London owe their existence to the fine deposit of another impervious material, the blue London Clay, which is an ideal material in which to construct tunnels; and in the districts where tube railways are conspicuous by their absence, such as the south-eastern portions of the Metropolis, their non-existence is chiefly due to a similar lack of London Clay.

The grey chalk was doubtless at one time white chalk, and was then water-bearing—but from some undefined cause the bed became saturated with liquefied clay, which percolated into it and "choked the filter," thus rendering it water-tight.

In deciding upon the actual route of the Channel tunnel the one great precaution which has to be, and has been, taken is to keep the work well within the thickness of the Grey Chalk; but as the line may, near the two coasts, have for a short distance to run out of this bed, it is so arranged as there to enter the Gault, which is another equally good and water-tight material. Owing to the observance of these precautions the tunnel will not make a "bee line" from England to France, but the slight sinuosity or curve introduced is otherwise of no importance.

In the Channel above the sea-bed the maximum depth of water would be from 160 to 180 feet, and as we shall be asked to leave undisturbed such a cover of chalk over the roof of the structure as will guard against any possible hostile contingency, this solid protection has been fixed at a minimum of 100 feet.

The tunnel would consist of two tubes, as in the case of the great Simplon Tunnel (12¼ miles in length) in the Alps. The reasons for adopting twin tunnels are numerous. They include better facilities for ventilation, drainage, repairs to the structure and permanent way when required during traffic, as well as greatly increased safety in case of derailments. But one special reason for adopting the system in the case of the Alpine tunnel—where 7000 feet vertical of material exists above the work—was the reduction of pressure on the arch and side walls. This great load will not, however, have to be provided for beneath the English Channel.

It is proposed that the work of excavation shall be performed by revolving cutters, fixed in Greathead shields, by which system a rapid rate of advance will be attained, the debris being removed from the "face" by high-speed endless belts. These will be so arranged as to deliver their load direct into wagons without the necessity of shovelling or of manual labour.

All the work will be carried on by electrically driven machinery, by which the volume of air required for ventilation will be greatly reduced, and arrangements will be made so that excavation and other operations can be carried on simultaneously at many points, thus abbreviating the period required for construction.

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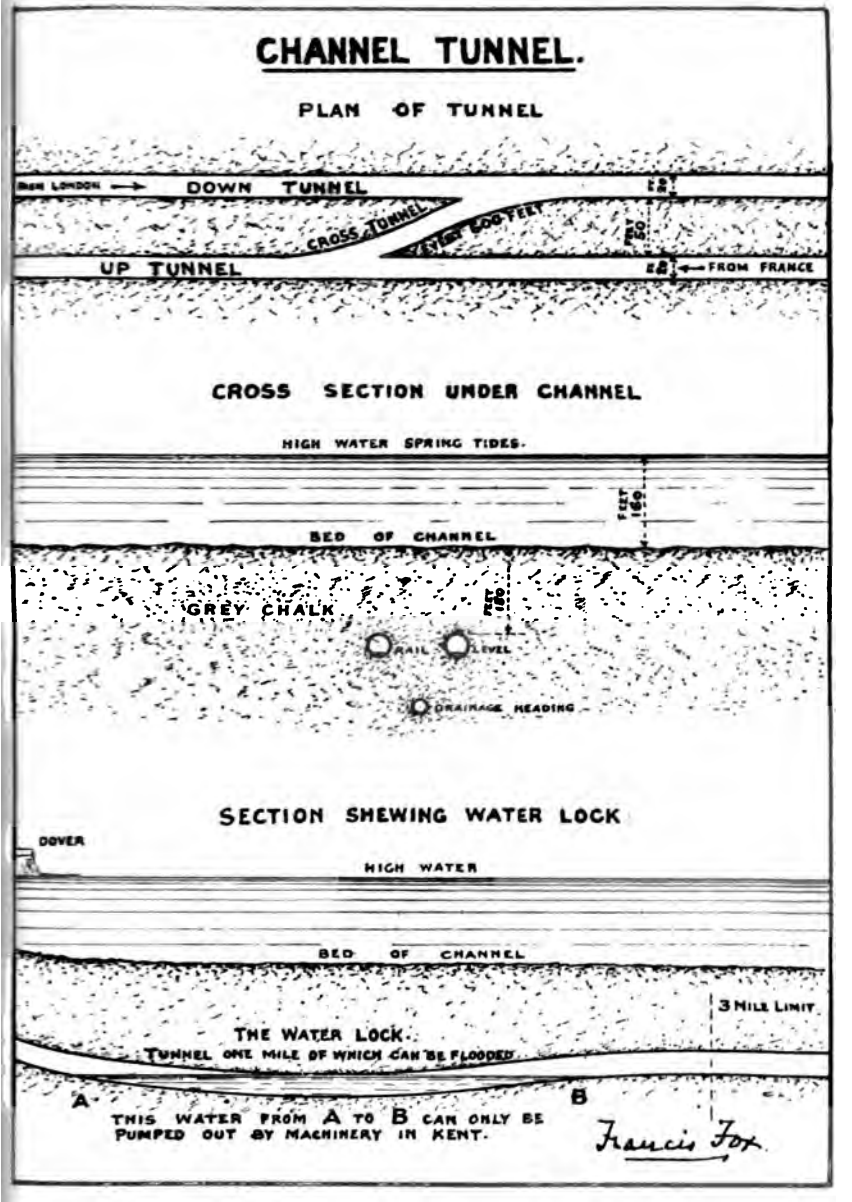

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The diameter of each tunnel should be 18 feet, so as to accommodate main line rolling stock. At intervals of 200 yards along the entire length oblique cross tunnels will be formed, both to enable empty wagons to be brought in by one line, full wagons despatched on the other, and also to permit a most excellent system of ventilation to be installed. Foul air should be considered as a slur on the management, as unfair to the workmen, and injurious to the progress, in addition to its being an unnecessary expense to the company. In the Simplon Tunnel a very large volume of fresh air was always provided, even at the most distant places at which operations were proceeding.

The workmen would be conveyed to their various duties, and brought out again at the end of their shift, by electrical trains. It is anticipated that the daily rate of progress would be such as has never been attained heretofore in any tunnel. To secure this no work will be permitted on Sundays, except for ventilation, pumping, and cases of urgent repair.

The tunnel could be worked, ventilated, and pumped by electricity supplied from a power-station in Kent, possibly 10 miles inland. The problem of ventilation when regular traffic is running will consequently be comparatively simple, no combustion of coal on the railway being necessary. The tunnel would be maintained under the authority of the War Office, and a dip in the level of the rails, forming a "water lock"—by which the tunnel could in case of emergency be filled with water from floor to roof for a length of a mile—would also be under the control of the Commandants of Dover Castle and the neighbouring forts. This water would not injure the tunnel works, and it could only be pumped out by the energy developed at the power station inland. Entrance and exit of both tunnels would likewise be under the gunfire of all the forts and of vessels in the naval harbour of Dover.

The gauges of the English and French railways are very similar, as is proved by the fact that at the present time hundreds of the largest English and Scottish locomotives with thousands of trucks are running in regular traffic on French railways, rendering invaluable service in the transport of the Allied forces.

Trains would be run direct from London to Paris in less than six hours, and these could, if required, travel at a "headway" or interval of not more than five to ten minutes.

Doubtless in course of time more than two pairs of rails will be required to deal with the enormous volume of traffic which must inevitably develop in each direction. It should be remembered that, owing to dislike of the Channel crossing, our Continental neighbours never go on shipboard if they can avoid it, and the pre-war traffic from *all* Continental ports to England and *vice versâ* did not exceed 1,600,000 passengers a year as compared with 4,000,000 travelling between France and Belgium and 4,000,000 between France and Germany.

The probabilities are confidently anticipated by Baron Emile

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d'Erlanger, Chairman of the Channel Tunnel Company, that the traffic will, as the result of the opening of a submarine railway, double or treble itself not only as regards passengers but also in respect of perishable goods requiring prompt delivery; and further, that the financial return upon the capital expended will be highly satisfactory.

It must not be forgotten that a tunnel will require no terminal stations with expensive staffs, nor will the Company have to provide locomotives and rolling stock, as all these will be supplied by the main line British and French systems. The Tunnel Company would simply be required to construct the works, operate the pumping and ventilation machinery, maintain the permanent way, and keep the signalling and telegraphic equipment in order.

Every one can now realize of what enormous value the tunnel would have proved had it existed at the beginning of the present war, in the saving of so many valuable lives, in vastly reduced suffering of the sick and wounded, and in immunity of fine ships from the danger of floating mines and submarines, while the safety of the cross-channel traffic amid the risks of submarine "frightfulness" under such circumstances must be self-evident.

We must also take into account the immense reduction which would have been possible in the army of dock labourers at the Channel ports of England and France, and added to this the great facilities available for the transport of troops, stores, guns, ammunition—advantages that are beyond computation. Certainly the entire cost of this great and desirable work would have been defrayed several times over. There is, however, one advantage perhaps in the fact that a tunnel constructed at the present time, with our increased knowledge of the problems involved, will be superior in several important respects to what would have been the case had it been built twenty-five years ago.

It is not necessary to dilate further upon either the geological or the engineering sides of the question, and although much could be said on both, the geographical considerations will now be dealt with. These, however, will to some extent be affected by the extraordinary difference of gauges on the various railways which exist in the world—varying from 5 feet 6 inches to 2 feet. Probably many of these will be altered to what may become practically the standard gauge—whilst in other cases a transhipment of passengers and goods, say once in a thousand miles, will minimize the inconvenience. One, however, cannot forget the delay and discomfort caused by the difference in gauge already existing at the Russian Frontier stations on arriving from France, Germany, or Turkey.

So soon as trains can pass under the Channel they will be able to traverse France, Belgium, Holland, Spain, Italy, Germany, Austria-Hungary, and Turkey as far as Constantinople without any difficulty as to gauge or minimum structures. The Orient Express connection formerly left London at 9 a.m., an inconvenient hour for many; but so soon as the

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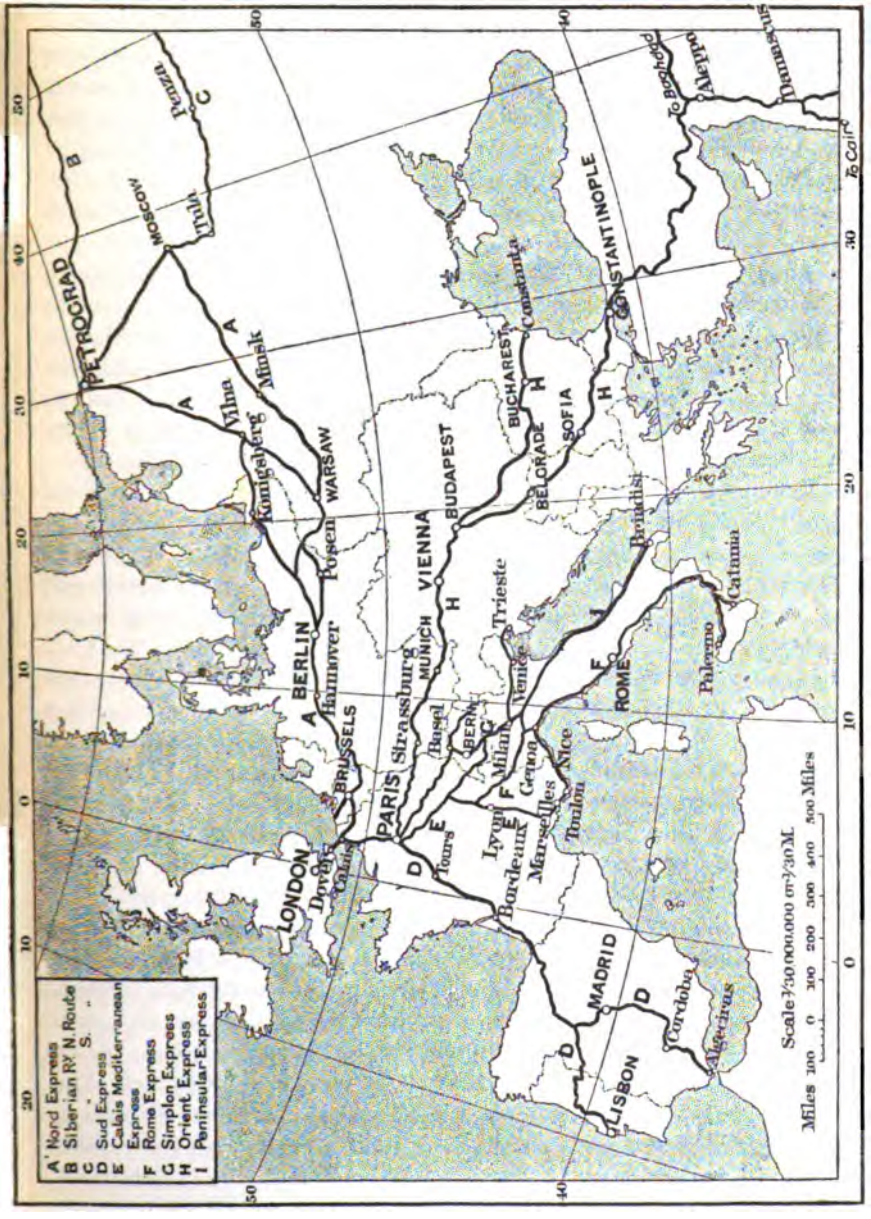
Channel tunnel is an accomplished fact it could be arranged to leave at noon and still depart from Paris at the usual hour. It would pass through Germany and Austria-Hungary to Bucharest, or through Bulgaria to Con-



SKETCH-MAP TO ILLUSTRATE EXPRESS SERVICES FROM LONDON BY A CHANNEL TUNNEL

stantinople. A quarter of an hour later a train would leave Charing Cross as the Nord Express for Brussels, Berlin, and Königsberg to Petrograd,

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and for Warsaw, Minsk, and Moscow, where it would correspond with the Siberian Railway Express to the Far East and provide communication also with the charming and healthy watering-places in the Southern Crimea, where great developments are taking place. At further intervals of a quarter of an hour the Rome express would leave for Paris—the Riviera, Rome *viâ* Turin and Milan, and Brindisi; followed by the Sud Express to Paris, Bordeaux, Madrid, Algeria on the one hand, or to Lisbon on the other. Communication would be provided not only with Belgium, Holland, and Denmark, but also with Finland, Sweden, and Norway *viâ* Torneå.

This wonderful network of railways deals only with Europe, but far greater developments are possible. From Petrograd and Moscow trains already run through the Ural Mountains, traversing Siberia—eventually reaching Pekin and the Chinese system of railways—and to Vladivostok, in thirteen days from London. Some fifteen years ago a great extension of the Siberian Railway was advocated, as "The Trans-Alaska Siberian Railway." Starting from the Trans-Siberian at Irkutsk, and skirting the north shore of Lake Baikal, it would run to East Cape, the most easterly point in Asia, at Bering Strait. At the same time an extension of the Canadian and American system of railways was to be built from Vancouver to Dawson City, going due west to Cape Prince of Wales, the most westerly point of the North American Continent. There would still remain a gap in railway communication at Bering Strait. Plans and estimates of a proposed tunnel beneath this strait have been mentioned, and two islands exist on the centre line of this projected work which would enable construction to proceed from six different points. The total length of the tunnel was said to be 38 miles; and indeed well-known gazetteers like Lippincott and Chisholm give 36 miles as the width of the strait. But the Admiralty chart and Findlay's 'Northern Pacific' make it about 56 miles instead of 36. A tunnel under Bering Strait is therefore impracticable, at least to present ideas of engineering.

The western terminus of the Baghdad Railway (4 feet 8½ inches gauge) is at Haidar Pasha, near Scutari on the Bosphorus, where some means of communication will be required to connect what is now Turkey in Europe with Turkey in Asia. The details of this necessary work will demand much consideration; for although a tunnel, a bridge, or a ferry has each its own advocates, there are many points requiring to be carefully weighed. The last-named proposal, a ferry, is free from the all-important objections to a Channel ferry—there being no tide with all its complications, and no such tempestuous weather as is met with in the English Channel. The Baghdad Railway thence traverses Asia Minor and the Taurus Mountains, where one hundred tunnels are required, all of which are not yet finished. It then passes to the north of the Gulf of Alexandretta, with its fine harbour, through Killis (the junction for the Syrian Railway and Mecca), towards Mosul and Baghdad. The development of Mesopotamia as one of the great granaries of the world, when the necessary barrages and dams, the

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drainage and irrigation works are in operation, will inevitably be accelerated by the railway; and the British oil pipe line in Persia will be accommodated. The railway will have to be extended to Basra and Koweit, and passing round the northern end of the Persian Gulf will reach Karachi, and thus get into touch with the whole of the Indian system of railways. At Killis, previously mentioned, is the junction between the Baghdad Railway and the existing Aleppo–Hamah–Homs of the same gauge; and with the Hidjaz Railway (3 feet 5·34 inches; 1·05 metres) connecting Damascus and Medina; junctions will be (or are already) made with the railway from Jaffa to Jerusalem (1·00 metre gauge), which would have to be widened—also with the Beirut and Damascus Railway (1·05 metres gauge). From the Aleppo line at Rapak a direct line to Cairo already exists as far as Beersheba, and from an adjacent point the railway at present being made by the British Army from the Suez Canal to Gaza will be available. This will be 4 feet 8½ inches gauge, and from Aleppo to El Kantara on the east bank of the Canal the distance will be 420 miles. The Canal would have to be tunnelled or provided with a lifting bridge or a ferry and thus connection would be effected with the entire system of Egyptian State Railways.

The projected and partly constructed Cape and Cairo Railway would eventually carry on the system to the Victoria Falls, Bulawayo, Johannesburg, and the Cape; and it would follow as a natural corollary that the Uganda Railway, as also the East African and West African lines, would be joined up eventually with it.

I am informed that surveys have been made for a railway from Irkutsk through China to Hongkong. Were this to be built the time from London to Hongkong would probably not be more than fifteen days, as compared with thirteen to Vladivostok. Or Singapore could be reached in about the same time if the Indian and Burmese lines were to be connected with those of the Malay States. Either of these routes would very materially reduce the sea passage between England and Australia; and when the transcontinental railway is built the London mails could probably be delivered in Sydney well within thirty days from London.

The present war has brought to the minds of all the extraordinary development of submarines, with their enormous potentialities for mischief; and although we hope that such a war and such a cruel and unjustifiable employment of these vessels may never again recur, it points to the great necessity and desirability in the interests of the world at large that communication should exist as far as possible by railway, as well as by shipping, so that in case of any great emergency arising, intercourse could still be available.

It may seem to us of to-day a very remarkable prospect, but by no means impossible of realization, that within a comparatively few years travellers from London will be able to reach such distant places as the whole of Europe, the most eastern parts of Asia, North and South Africa,

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India and China, without leaving the railway systems of the world, through the medium of the Channel tunnel; this will offer a very great incentive to travelling to regions at present scarcely regarded as being within the bounds of possibility.

Before the paper the PRESIDENT said: We are to have a paper this evening on a very interesting subject, and we have the good fortune to have for our lecturer one who is eminently qualified to speak upon that subject—Sir Francis Fox, a past-master in engineering. He has made a tunnel under the Mersey in the face of great difficulties; but perhaps he is best known by his connection with the great Simplon Tunnel, in many ways one of the most difficult to construct and the longest of all the Alpine tunnels. It is a double tunnel, and many of its features are similar to those of the proposed Channel Tunnel. Sir Francis Fox is connected with every kind of engineering and railroad work all over the world, and I am sure we shall listen to what he has to tell us with the deepest interest.

(*Sir Francis Fox then read the paper foregoing, and discussion followed.*)

Baron EMILE D'ERLANGER (Chairman, Channel Tunnel Company): Even in times of peace and goodwill amongst nations the Channel Tunnel was considered a controversial subject. When war broke out I felt that, whilst it would be easy to find in the lessons of the war convincing arguments in favour of the construction of the tunnel, it would be out of place for a mere civilian to put them forward. None will be better able to judge of the certain advantages and possible risks of the Channel Tunnel than the men who are leading our nation and our armies and navies to victory; to them must be left the ultimate decision. Meanwhile my lips are closed on some of the most interesting aspects of the question, but there are others which may not be unworthy of your attention.

Had I to teach the history of the Channel Tunnel Scheme I would show Mathieu, the eminent French engineer, explaining his early scheme to Napoleon, and the Emperor in conversation with our then Ambassador in France, during the short-lived peace of Amiens, saying, "C'est une des grandes choses que nous devrions faire ensemble." Needless to say that a long time elapsed before the idea was resuscitated. It was again a French engineer, Monsieur Thomé de Gamond, who brought it to the front; and it found favour with Queen Victoria and the Prince Consort. Lord Clarendon, Lord Derby, the Marquis de Lavalette and the Comte de Jarnac in 1876 signed the joint Protocol under which the tnnnel was to be constructed.

Soon afterwards a French company was formed and obtained a concession for constructing the French portion. It set to work and actually bored some 2000 yards of the tunnel. This company was formed under the ægis of the French firm of Rothschild and of the Chemin de fer du Nord; it is still in existence and ready to resume its activities.

Meanwhile a similar policy was followed in England. The Channel Tunnel Company was formed, and obtained an Act of Parliament to carry on experimental work at St. Margaret's Bay. No work was, however, done by it; but the South Eastern Railway Co., which had obtained a similar Act, constructed 2015 yards of the Tunnel, so that 4000 yards were actually bored between the two shores. The works on the English side were taken over and paid for by the now existing Channel Tunnel Company.

The rivalry existing at the time between the Chatham and Dover and the South Eastern Railways, who were the promoters of the two Acts, was

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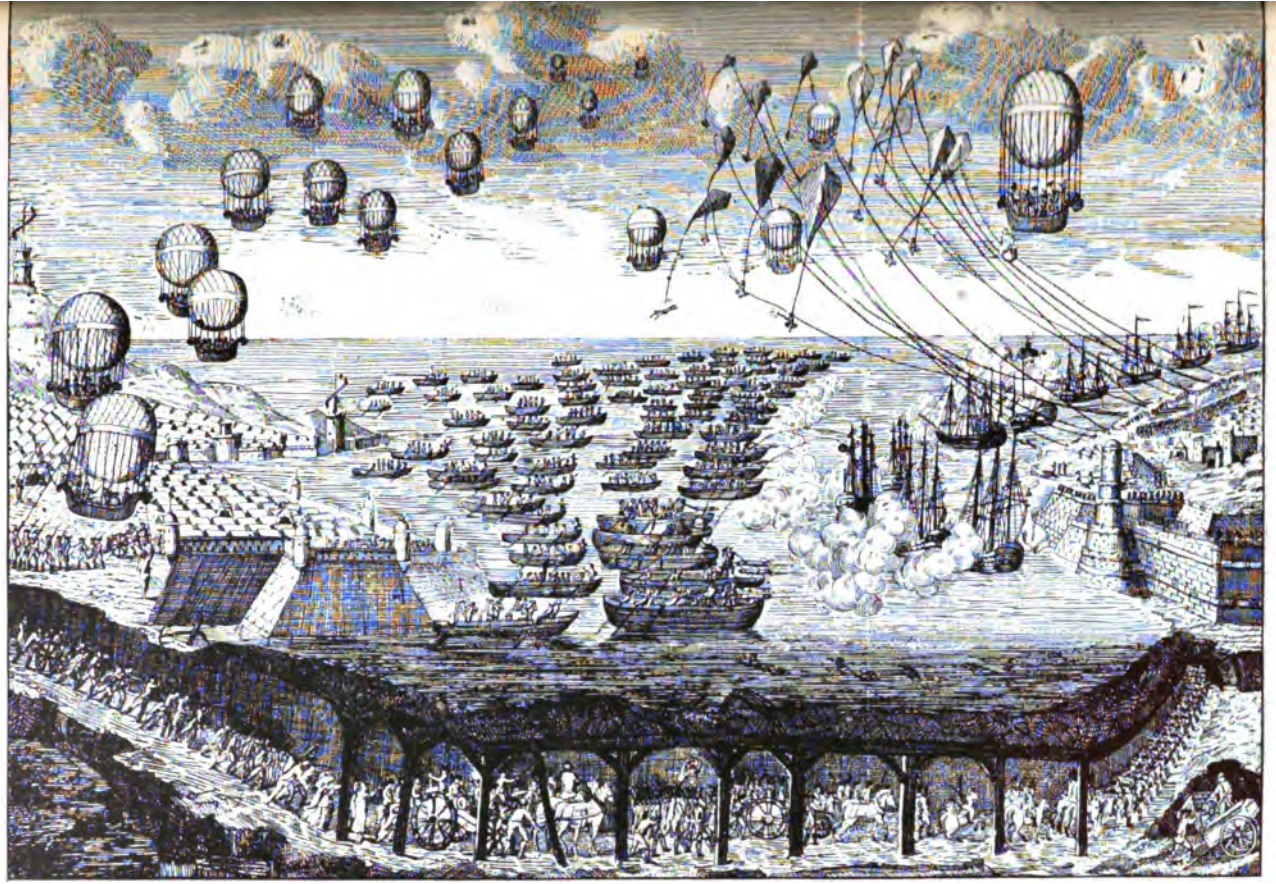

"DIVERS PROJETS SUR LA DESCENTE EN ANGLETERRE."

From an engraving of 1804 in the possession of Dr. H. R. Mill.

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responsible for the miscarriage of the enterprise. It resulted in a powerful opposition to the South Eastern Railway's project, backed by eminent men like Sir Garnet Wolseley. This opposition found an echo in Parliament, and the application to resume work, which had been suspended by an order of the Board of Trade, was defeated by a narrow majority. To refer to the attempts to reverse this decision would bring me within the precincts of my self-prohibited area.

To deal geographically with the subject of the Channel Tunnel without giving a few words to the countries and populations which it serves, would be to ignore one of the chief aspects of the subject. I must assume that under the wholesome lesson of a crushing defeat and adequate atonement, the populations of the Central Powers will learn wisdom and repentance, and will recant the sinister doctrines of their present governments which have placed them under the ban of the whole civilized world. It is only on this assumption that I am treating Europe as a whole, and as a community of some 400,000,000 which would be brought into closer communion by the construction of the tunnel. The interchange of passenger traffic between our own population of 48,000,000 and the balance of 350,000,000 has been incomprehensibly small in comparison with the exchange of passenger traffic between any two units of the continental countries such as France and Belgium, Belgium and Germany, or Germany and France before the war. I will give only two instances. In 1911 the interchange of passenger traffic between France and Germany, representing together a population of 100,000,000, was 2,800,000; that between France, Belgium, Holland, with a population of 50,000,000, amounted to 4,350,000.

Between England and the whole Continent it was 1,600,000, and of this total our population of 48,000,000 furnished well over 1,200,000, showing that for three English passengers who go to the continent, only one continental passenger comes to England. If, as computed, the average personal expenditure per passenger, outside his own country, amounts to £20 per head, it follows that in pre-war time English travellers spent abroad some £16,000,000 a year more than England received from continental visitors. If the traffic could be equalized by the construction of the tunnel, England could practically pay for the cost of the whole construction out of the savings of one single year.

But apart from any economic considerations, and assuming that the Central Powers were placed in complete quarantine which entirely segregated us from them, and in turn segregated us from continental communication with our ally Russia, would it not be politic to construct this link for the benefit of France, Belgium, and Italy alone? I ask you, in all sincerity, can you conceive a nobler way of celebrating the victory of our allied arms, a more convincing symbol of lasting mutual confidence and unity, than in building this link between our shores?

Mr. ARTHUR FELL, M.P.: I have to deal only with a subject with which I am intimately connected—the position of the Channel Tunnel question in the House of Commons, which hitherto has been the stumbling-block to the creation of this great tunnel. Thirty years ago the proposal to make this tunnel was thrown out by strong pressure of the Government on the advice of their military advisers. The idea was that England stood in great danger of invasion from France; that because we fought the Napoleonic and other wars more than a century ago France must always remain our enemy; and that when we talked of going to war it always meant war with France. That was, of course, the great Duke of Wellington's idea. He had fought so long against the French that he thought we should always fight them, and for that reason he

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and many other statesmen opposed anything which would render our communication with the Continent more easy. They opposed the railway from Southampton to London; they said that was too dangerous, that the French would more easily take London. They opposed the establishment of a steamship line between England and France; they said that would be very dangerous. They opposed even the laying of a submarine cable between France and England; they said the French might seize the English end of the cable, and then all would be lost! They would have opposed, I have not the slightest doubt, any method by which communication with the Continent could have been made more easy, and so enable our neighbours to do more business with us and become better acquainted with these islands.

Thirty years ago this proposal was stopped, and no progress has been made since. At last a party was got together in the House in 1913, the year before the war broke out. We felt that it was really preposterous that this great work of utility and, as we thought, safety to this country, both in the conduct of military affairs and in the supply of food, should not be carried out for fear the French should come over and attack us. Our small committee in the House of Commons grew rapidly to 170 members, drawn most carefully from all parties; it is thoroughly representative, and politics are unknown to it. The bond which unites us is that we are all anxious to see this tunnel made; we do not mind how it is made or by whom. We do not think that the tunnel could be constructed during the war. All we ask the Government to do is to say they will sanction this tunnel being commenced after the war is over. An object like the Panama Canal or the Suez Canal or the Channel Tunnel is a great thing for a nation to set its eyes upon and to see gradually completed. It is of immense interest to people, and gives them something to look forward to. Our French friends have, as you know, consistently and heartily supported the construction of this tunnel; but they have paid the greatest regard to our scruples, and they have said, "The insularity of your country, we know, is a very important factor in your minds. We do not urge you to make this tunnel to join up with the Continent; we are ready to make our half, and directly you say the word we will go ahead. We think it is to your advantage and to ours; we do not wish to put the slightest pressure upon you; we do not wish to hold meetings and recommend it; we are ready to do our part as soon as you are ready to do yours." I have had assurance from every quarter to that effect. They are ready to do it, but we must move first. They have continuously held out their hands to us for these thirty years; we have held our hands behind our backs in the past, but I am sure that when the war is over we shall also reach out and join hands with the French beneath the Channel.

The PRESIDENT: I came here to learn all I could about the Channel Tunnel, but Sir Francis Fox has distracted my mind. He has held out such fascinating glimpses of foreign travel in every quarter, not only in the Old World but in the New, that he has made our mouths water. It is rather cruel just at this moment when we cannot take our Easter holidays to lay before us such delightful plans for trips to Japan, Persia, or South Africa. But to come back to the Channel Tunnel. We all know the objections that have been made to it. There is first the sentimental, the Shakespearean, that England is an island. You perhaps recall, as Lord Bryce did to me recently, the old story of the Cnidians. They lived on a promontory, and for their better protection in the time of the Persian war they tried to dig a channel to divide their city from the mainland. Meeting however with a number of accidents and obstacles, they consulted the oracle at Delphi, and the reply they got was,

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"Let no man try to put asunder those whom Zeus has joined." Our objectors to the Channel Tunnel are apt to reverse the oracle and say, "Let us not join those whom God has put asunder." A similar argument was used, I believe, in more recent times, when a Spanish king first proposed to cut across the Isthmus of Panama. Then we are met by the military objection, and it is more or less rash for a layman to speak on military subjects. It seems to me that every objection made to the Channel Tunnel might have been made by the Italians to the boring of the Alps; to the Mont Cenis tunnel in the first place, then to the St. Gothard, and last to the Simplon. Yet it is to these great works that Milan and Genoa owe their growing prosperity. It is to me hardly conceivable that modern engineers could not with the greatest ease inflict upon any Pharaoh who tried to cross the British Channel by the tunnel the fate that befell the original Pharaoh in the Red Sea. With regard to the use of a tunnel in the present war, I confess I doubt if, taking all the circumstances into account, we have suffered so much from our delay in constructing it as some of the speakers to-night have suggested. Would not the Germans at the very beginning of the war, when we only had our little army on the Continent, have made a rush to the French end of the tunnel instead of towards Paris, and thereby deprived us, at any rate for a time, of its use? They made their rush, it is true, for Calais, but when they did so it was just too late. So much for the objections. On the other hand the conveniences and commercial advantages of the tunnel appear obvious. It would mean in the first place that all goods would go from the English factories and warehouses straight to all parts of Europe and Asia instead of having to be sent to the Port of London or Liverpool to be shipped, and then unloaded again. Then we have had some interesting statistics with regard to travellers. There can be no doubt that with the increase in the number of visitors from the Continent which would result from the tunnel we should not only learn to know our neighbours better, but a considerable amount of money which now goes to the enrichment of Switzerland and other foreign resorts would be spent in this country.

In looking forward and preparing for the future of Western Europe we may surely reckon on the peace, when it comes—a peace cemented by so much loss and suffering—being a lasting one: on the *Entente cordiale* becoming an *Alliance perpetuelle.* The project put before us to-night of a connecting link between the allied nations would, it seems to me, be a very appropriate symbol and memorial of the permanent union, in the cause of Freedom, of France and England.

I believe therefore that the meeting will be with me when I say that I sincerely hope that Sir Francis Fox may have the happiness of seeing this work, which he has planned so long and so ingeniously and with so absolute a mastery of all its details, carried out under his superintendence. I express the thanks of the meeting to him for coming here at rather shorter notice than usual and giving us such an instructive account of how the work could be done.

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To
Mr. W. H. Johnston
with the author's Compl.

SMITHSONIAN INSTITUTION.

UNITED STATES NATIONAL MUSEUM.

FIRE-MAKING APPARATUS IN THE UNITED STATES NATIONAL MUSEUM.

BY

WALTER HOUGH.

From the Report of the National Museum, 1887–'88, pages 531–587, and Plates LXXIV–LXXXI.

WASHINGTON:

GOVERNMENT PRINTING OFFICE.

1890.

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FIRE-MAKING APPARATUS IN THE U. S. NATIONAL MUSEUM.

By WALTER HOUGH.

Man in his originals seems to be a thing unarmed and naked, and unable to help itself, as needing the aid of many things; therefore Prometheus makes haste to find out fire, which suppediates and yields comfort and help in a manner to all human wants and necessities; so that if the soul be the form of forms, and the hand be the instrument of instruments, fire deserves well to be called the succor of succors, or the help of helps, that infinite ways afford aid and assistance to all labors and the mechanical arts, and to the sciences themselves.—BACON.—*Wisdom of the ancients, Prometheus*, Works, vol. iii. Lond., 1825, p. 72.

There is a prevalent belief that to make fire by rubbing two pieces of wood is very difficult. It is not so; the writer has repeatedly made fire in thirty seconds by the twirling sticks and in five seconds with the bow drill.

Many travelers relate that they have seen various peoples make fire with sticks of wood. The most common way, by twirling one stick upon another is well described by Pere Lafitau with reference to the Hurons and Iroquois.

They take two pieces of cedar wood, dry and light; they hold one piece firmly down with the knee and in a cavity which they have made with a beaver-tooth or with the point of a knife on the edge of one of these pieces of wood which is flat and a little larger, they insert the other piece which is round and pointed and turn and press down with so much rapidity and violence that the material of the wood agitated with vehemence falls off in a rain of fire by means of a crack or little canal which leaps from the cavity over a match [slow match]. This match receives the sparks which fall, and preserves them for a long time and from which they can make a large fire by touching it to other dry materials.*

All these descriptions omit details that are essential to the compre hension of the reader. There is a great knack in twirling the vertical stick. It is taken between the palms of the outstretched hands, which are drawn backwards and forwards past each other almost to the finger tips, thus giving the drill a reciprocating motion. At the same time a strong downward pressure, is given which may be called a rotating pressure. The hands move down the drill; when they nearly reach the lower end they are brought back to the top with a quick, deft motion. This is repeated as rapidly as possible. If the lower part of the drill is observed when the motion begins it will be seen that powder is ground

*Lafitau.—Moeurs des Sauvages Ameriquains. Paris, 1724. II, p. 242, 243.

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off and is collecting in the canal cut into the cavity from the side of the lower piece of wood. Soon, as the motion progresses, the powder begins to increase and to get darker, the odor of burning wood is noticed and the smoke is seen. Probably when the next motion ceases there will be a little curl of peculiarly colored smoke, which shows that active combustion has begun. The pellet of ground-off wood may now be shaken out of the slot or canal. At first it is dark; a thin line of smoke comes from it; gradually the fire spreads through it until it glows. In this semi-charred dust the heat is held until it increases to about 450°, or higher. Everything depends on keeping the dust in a heap; it is impossible to make fire without doing this. This is true in all kinds of wooden fire-making tools.

By examination of many specimens of aboriginal fire apparatus it is found that both the drill and lower piece, which, for convenience, shall be called the hearth, must be of dry, inflammable wood. Wood that is soft from incipient decay is chosen; most often pieces riddled by worms. This is the *felicis materia* spoken of by Festus as used by the Vestals. Wood of this kind is not only easier of ignition, but it is ground off more easily and retains the heat generated until enough is accumulated to ignite the powder. In strong, skillful hands fire can be made from wood that does not wholly fulfill these conditions.

Woods vary in combustibility, depending on their density, coloring matter, and, perhaps, their chemical constitution. Sap wood of juniper and soft, white maple yield fire with the bow, but light mesquite is the best of all. The vascular, starchy flowering stems of plants have always been a favorite fire-generating material.

It will be seen that the Eskimo attachments to the simple drill enable him to use wood ordinarily of no account for making fire. Sand is used by Indians and other peoples to increase the friction.

From the material in the collection at the Museum, it is found that nearly every method that is or was used in the world is represented. The following classification, based upon the presumed order of development of the invention, is followed in this paper:

I.—Fire-making by reciprocating motion.

1. *Simple, two-stick apparatus:* Indians of the two Americas, Ainos, Somalis, Kaffirs, Veddahs, Australians, etc.
2. *Four-part apparatus:* Eskimo, some Indians, Hindoos, and Dyaks.
3. *Weighted drill,* with spindle whorl; Iroquois and Chukchis.

II.—Fire-making by sawing.

Malays, Burmese, etc.

III.—Fire-making by plowing.

Polynesians, Australians, and Papuans.

IV.—Fire-making by percussion.

1. *With pyrites, or stone containing iron, and flint:* Eskimo and northern Indians.
2. *With flint and steel:* General.

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I. FIRE-MAKING BY RECIPROCATING MOTION.

1. SIMPLE TWO-STICK APPARATUS.

This method may be said to have a world-wide distribution, and to have had no narrow range in time. It is a very interesting study to observe the many different practices that have been superadded to the simple task of twirling two sticks with the design of creating fire. It is also instructive to note how fixed have become tribal characters in so small a thing as the shaping of the elements of the fire drill. It has well been said by Dr. Schweinfurth, that—

> A people, as long as they are on the lowest step of their development, are far better characterized by their industrial products than they are either by their habits, which may be purely local, or by their own representations, which (rendered in their rude and unformed language) are often incorrectly interpreted by ourselves. If we possessed more of these tokens we should be in a position to comprehend better than we do the primitive condition of many a nation that has now reached a high degree of culture.*

This fact holds good with reference to tribes in a higher plane than the learned writer included in this statement, in this way. There are many little things that have not been subject to the modification of time, intercourse, or environment, but co-exist with an art. To particularize: Prof. E. S. Morse has shown the value of the simple act of releasing an arrow from a bow-string as a classifier. Close attention to the minor acts and arts will reveal much more than the nice measurements of man's practically unmodified skeleton.

Differences that have become functional in the arts have come down from an early period; when they can be found they are of the greatest value as aids in ethnology.

The ethnography of the simple fire drill is studied geographically, beginning in North America with the most northerly tribes that use it, and ranging from north to south in the different sections of the country, among the tribes from which there are specimens in the Museum. Other countries are examined from west to east.

The Sitkan fire-drill spindle is unusually long and thick (fig. 1). Both hearth and drills are of the *Thuja gigantea*, a tree that enters so largely into the life of the Indians along this coast. The wood grinds off very well with much friction; at ordinary speed there is soon a small heap of powder at the bottom of the fire slot. The latter is deeply cut in from the side nearly to the center of the fire-hole. The whole hearth has been charred at the fire. This repels moisture, and also renders it easier to ignite the wood, charring being a process somewhat analogous to the decay of wood by rotting. If kept carefully in a dry place, this apparatus was perfectly adequate for the purpose of the Sitkan, and in his skillful hands would no doubt give the spark in a minute or so. The long drill would indicate that two worked at it consecutively

* Schweinfurth.—The Heart of Africa. New York, 1874. I, p. 257.

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to keep up a continuous motion, as will be noted in the use of the Aino drill (p. 551).

For tinder, the bark of the arbor vitæ was used. It is finely frayed, and is much improved by being slightly charred. They also use, preferably, a tinder made from a fungus, because it is "quicker," *i. e.*, ignites more readily than the frayed bark.

The hearth is squared and measures 23 inches; the drill is of equal length.

Going southward from Sitka the next fire-making set in the series is from Bella-Bella, British Columbia. These Indians are of the Salishan stock, and are called Bilhulas. The horizontal is a piece of cedar wood dressed square on three faces. It is apparently a piece of an oar or spear handle. The fire-holes are shallow, and the fire slots are quite narrow (fig. 2). The drills have been scored longitudinally near the rubbing end; this may be a device to cause the wood to wear away more rapidly, and furnish fuel to the incipient fire. Fire has evidently been made with this set. Both parts are 1½ feet long; the drill is much thinner than that of Sitka. The tinder is of frayed cedar bark.

From a southern family of the Salishan stock, called the Quinaielt Indians, of Washington Territory, the museum has a complete set collected by the late Charles Willoughby. It consists of a hearth, two drills, and a slow-match. The hearth is a rounded piece of cedar wood; opposite the fire-holes it is dressed flat, so as to rest firmly on the ground. There are three fire-holes with wide notches. The drills taper to each end, that is, are larger in the middle (fig. 3). The powder, a fine brown dust, collects at the junction of the slot and fire-hole, where they form a lip and there readily ignites. This side of the hearth is semi-decayed. No doubt the slots were cut in that side for the purpose of utilizing this quality. The drills are bulged toward the middle, thereby rendering it possible to give great pressure and at the same time rapid rotation without allowing the hands to slip down too rapidly, a fault in many fire-drills. The slow-match is of frayed cedar bark, about a yard long, folded squarely together, and used section by section. Mr. Willoughby says:

> The stick with three cavities was placed upon the ground, the Indian kneeling and placing a knee upon each end. He placed one end of the smaller stick in one of the cavities, and, holding the other end between the palms of his hands, kept up a rapid half-rotary motion, causing an amount of friction sufficient to produce fire. With this he lighted the end of the braided slow-match of cedar bark. This was often carried for weeks thus ignited and held carefully beneath the blanket to protect it from wind and rain.

Fire is easily procured with this set. It takes but a slight effort to cause a wreath of aromatic smoke to curl up, and the friction easily grinds off a dark powder, which collects between the edges of the slot. When this ignites it drops down the slot in a little pellet, and falls upon the tinder placed below to receive it. Both drill and hearth are 18 inches long.

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Fig. 1.
FIRE-MAKING SET.
(Cat. No 74,379, U. S. N. M. Tlingit Indians, Sitka, Alaska. Collected by John J. McLean.)

Fig. 2.
FIRE-MAKING SET.
(Cat. No 20,644, U. S. N. M. Bella-Bella, B. C. Collected by James G. Swan.)

Fig. 3.
FIRE-MAKING SET AND SLOW MATCH.
(Cat. No 127,866, U. S. N. M. Quinaielt Indians, Quinaielt, Washington. Collected by Charles Willoughby.)

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Fig. 4.
FIRE-MAKING SET.
(Cat. No 24096, U S N M, Klamath Indians, Oregon, Collected by L S Dyar.)

The Klamaths, of Oregon, of the Lutuamian stock, use a fire apparatus that looks very much like that of the Utes. The hearth is a rounded piece of soft wood thinned down at the ends (fig. 4). The drill is a long, round arrow-stick, with a hard-wood point set in with resin and served with sinew (see Ute drill, fig. 7). The holes in this hearth are very small, being less than three-eighths of an inch in diameter. They are in the center, and the fire slot being cut into the rounded edge widens out below, so that the coal can drop down and get draught. The wood is quite soft, apparently being sap-wood of yew or cedar, while the drill-point is of the hardest wood obtainable. It is probable that sand is used on the drill. The hearth is 13 inches long, and the drill 26.

The Chinooks, a tribe of Indians of a separate stock, called Chinookan, formerly lived about the mouth of the Columbia River, in Oregon, but are now nearly extinct. Hon. James G. Swan, the veteran explorer, investigator, and collector among the Northwest coast tribes, says that the Chinooks are the best wet-weather fire-makers he ever knew.*

To kindle a fire the Chinook twirls rapidly between the palms a cedar stick, the point of which is pressed into a small hollow in a flat piece of the same material, the sparks falling on finely frayed bark. Sticks are commonly carried for the purpose, improving with use.†

Mr. Paul Kane‡ describes the hearth as a "flat piece of dry cedar,

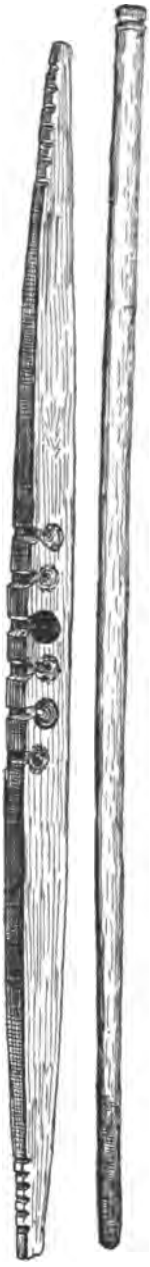

Fig. 5.
FIRE-MAKING SET
(Cat. No. 77193, U. S. N M, Hupa Indians, California. Collected by Lieut. P H Ray, U S A.)

* Swan.—Northwest Coast. p. 248.
† Bancroft.—Native Races. I., p. 237.
‡ Kane.—Wanderings of an Artist among the Indians. London, 1859.

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in which a small hollow is cut with a channel for the ignited charcoal to run over. In a short time sparks begin to fall through the channel upon finely frayed cedar bark placed underneath, which they soon ignite." The Ahts and Haidas also use cedar fire-sticks of the usual Indian kind.

The Hupa Indians of California are of the Athapascan stock. Their fire-drill is a carefully made piece of apparatus (fig. 5). The hearth is of a reddish, punky piece, probably of mesquite, *Prosopis juliflora*, somewhat harder than the drill, which is charred slightly for some distance along the grinding end. Fire has been made in one of the holes; the others show the rough, frayed cavities which have been made to start the drill. The notches at each end of the hearth seem to be to facilitate the tying of the pieces together as a precaution to prevent their loss or separation. They are usually intrusted into the hands of the most skillful fire-maker, who wraps them up to keep them from becoming damp. The effectiveness of the sticks increases with use and age; a stick and hearth that have been charred by the former making of fire in most cases yields the spark in half the time required for new apparatus. Another advantage is that the drill is softer from incipient decay.

That this set is in the highest degree efficient is shown by the fact that the writer repeatedly got a glowing coal, the size of a pea, from it in less than twenty seconds. The hearth is 18 and the drill 21 inches long.

The McCloud River Indians (Copehan stock) make the drill from the buckeye tree.

The Indians of Washoe, Nevada, from their language, have been classed by the Bureau of Ethnology as a separate stock, the Washoan. Stephen Powers, many years ago collected a rather remarkable hearth from these Indians. It has eight rather small holes, in every one of which fire has been made. The wood is soft, well-seasoned pine. Apparently sand has been made use of to get greater friction, as is the custom of the Zuñis and Apaches. This device, in a measure, obviates the necessity of having tinder-like wood, or wood in a state of partial decay. For the drill any hardwood cylindrical stick might be employed. A strip of buckskin about an inch wide is passed around the hearth over the fire-holes to keep them dry (fig. 6).

At the end of the hearth is a mass of cement made of the resin of a pine mixed with sand, apparently; a kind of material used by the Indians over a large area in the Great Basin and southward to fix their arrowheads, pitch the water-bottles, and for other purposes. It is quite probable that this stick was the property of an arrow-maker, whose need of fire to melt the somewhat intractable cement, caused him to combine these functions in one tool.

It has a better finish, and displays greater skill in its manufacture than the fire-tools of the neighboring tribes of Shoshonian (Utes) and

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Moquelumnian stocks. In fact, it has a close affinity in appearance to those of the very near Athapascan (Hupa, etc.) stock. It is a matter of very great interest to compare with this a stick from the Mackenzie River. (See Fig. 28.) The resemblance is striking; it is as though one found a word of familiar sound and import in an unexpected place. The related tribes of the Indians dwelling on the Mackenzie have a wider range than the distance between the localities whence the respective sticks came; in fact, the Athapascans range about 50 degrees in latitude and the southern colonies of this great family are only about 250 miles southeast of the Washoans, while, as has been stated, the Hupas are quite near.

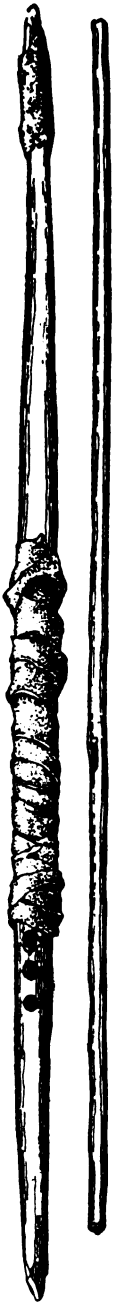

Fig. 6.
FIRE-MAKING SET.
(Cat. No. 19640, U. S. N. M. Washoe Indians, Nevada. Collected by Stephen Powers.)

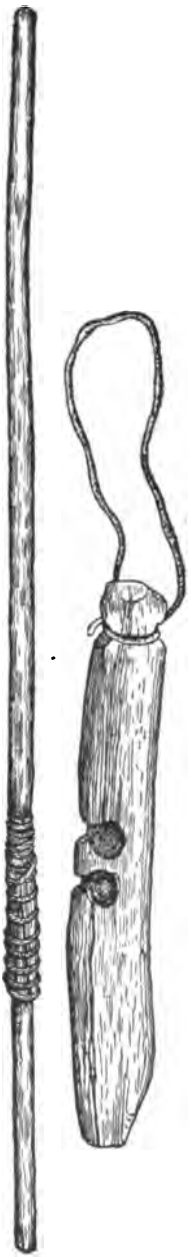

Fig. 7.
FIRE-MAKING SET.
(Cat. No. 17230, U. S. N. M. Pai-Ute Indians, Southern Utah. Collected by Maj. J. W. Powell.)

It would be presumptuous to say at present that this tool is a remnant of the influence of the Athapascan wave that swept along the Great Interior Basin, leaving groups here and there in California and other parts to mark its progress, but there is more to its credit than a coincidence of form and function.

The museum is in possession of a complete collection of fire-making material from the tribes of the Shoshonian stock. They were collected by Maj. J. W. Powell. The native name for the Ute fire set is *whu-tu ni-weap*. While the lower member of the set—the hearth—differs among the several tribes in point of material, shape, etc., the spliced drill is characteristic of the whole stock. It has never been noticed outside of the southern part of the Great Interior Basin but in one instance—among the

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Klamaths of Oregon. The main part of the drill is either a reed, or a straight sprout, usually the former. At one end a short piece of very hard wood—greasewood, *sarcobatus vermiculatus*—is set in and lashed with sinew. It resembles the Shoshonian arrows, which are foreshafted in this way. They also use sand in common with other neighboring tribes.

The Pai-Utes, of Southern Utah, make their hearths of a short, rounded piece usually of the sapwood of juniper. It is tied to the drill with a thong of buckskin when not in use (fig. 7). The drill is like the usual one, just described. This is the common form of the Pai-Ute apparatus. The small, two-holed hearth of rounded form, and the shortened, spliced drill are for convenience of carrying, this kind being used by hunters while away from the lodges. Mr. S. J. Hare says that the men do not usually make the fire, except when out on a hunting excursion. At the lodge it is the squaw's duty to make the fire when it is needed.

The Pai-Ute is rarely at a loss to get fire; he is master of various devices. Mr. Hare, who was among the Utes for some time, states that when the Indian is in need of a light he uses either the flint and steel, the drill, or, if these are not at hand, he takes two branches, and rubs one up and down on the other, soon getting fire. The Australians are said to have practiced fire-making by rubbing in the way mentioned. This is the only observation collected of its occurrence in America. It is, in all probability, a difficult, unusual way; only practiced under pressure of necessity among the Utes. They take great

Fig. 8.
FIRE-MAKING SET.
(Cat. No. 11976, U. S. N. M. Pai-Ute Indians, Southern Utah. Collected by Maj. J. W. Powell.)

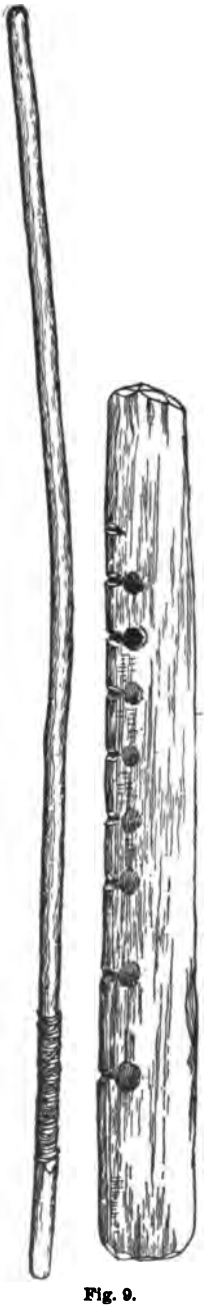

Fig. 9.
FIRE-MAKING SET.
(Cat. No. 23022, U. S. N. M. Shoshone Indians, Wind River, Wyoming. Collected by Maj. J. W Powell.)

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pride in their skill; to be a quick fire-maker is to achieve fame in the tribe. They are fond of exhibiting their art to white travelers in the hope of gain.

Another form of hearth (fig. 8.) is made of yucca flower stalk, like those of the Apache and Navajos. The drill is of tule reed, set with a very hard wood head. It is suggested that the reason for splicing the drill is that the hard wood of the kind used for the head (greasewood) can not be procured in pieces long enough to make the whole drill. This set is apparently one used as a fixture in the Ute domestic economy, the squaws having to light the fire. The duty is mainly relegated to the females in several other Indian tribes, and among the Eskimo. Mr. Catlin says that the Sioux objected to letting the squaws have their portraits painted, saying that their women had never taken scalps, nor done anything better than make fires and dress skins.* The hearth and drill last figured are respectively 20 and 23 inches long, while in the hunting set (fig. 8) the length is 7 and 18 inches.

The Wind River Shoshones are also represented (fig. 9). The hearth is of hard wood, rudely hacked out, and rounded. Upon the slanting edge are eight holes, or shallow depressions, prepared for the drill, with notches cut in to meet them from the sides. The drill is a willow branch, 25 inches long, with a hard wood head mortised in, and served with buckskin. It is most probable that sand was used with this set, because, if the parts are not models, it would be necessary to use it on sticks of equal hardness like these. I am inclined to believe that they are models, from their appearance, and from the difficulty of setting up a pyrogenic friction upon them even with sand. They were collected some fifteen years ago by Maj. J. W. Powell.

The Mokis are the most differentiated members of the Shoshonian stock. Mrs. T. E. Stevenson collected the two excellent fire-making sets in the Museum from the Moki Pueblos. The hearth is a branch of the very best quality of soft wood. In one hearth an end has been broken off, but there still remain eighteen fire-holes, showing that it was in use for a long time and highly prized (fig. 10). The drill is a roughly dressed branch of hard wood. It is comparatively easy to make fire on this apparatus. In the set numbered 126,694 these conditions are reversed; the hearth is tolerably hard wood and the drill soft wood.

The Moki fire-tools are used now principally in the estufas to light the sacred fire and the new fire as do the Zuñis, and the Aztecs of Mexico did hundreds of years ago. They use tinder of fungus or dried grass rubbed between the hands.

By their language the Zuñi people belong to a distinct stock of Indians. Their fire-sticks are of the agave stalk, a soft, pithy wood with harder longitudinal fibers, rendering it a good medium for the purpose of making fire.

*Smithsonian Report. 1885. Pt. ii, p. 723.

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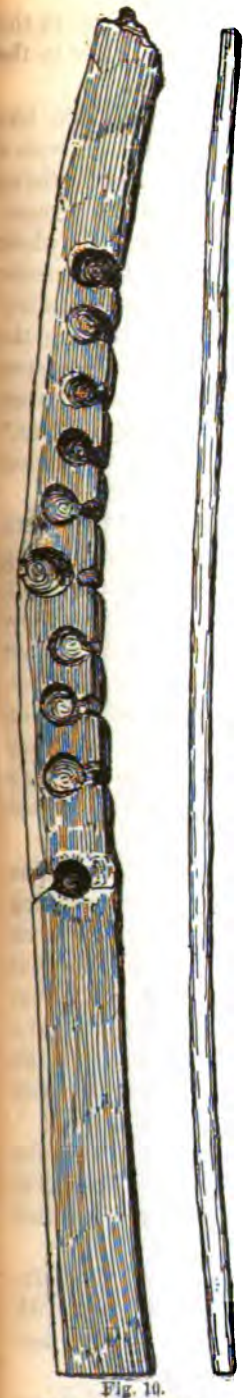
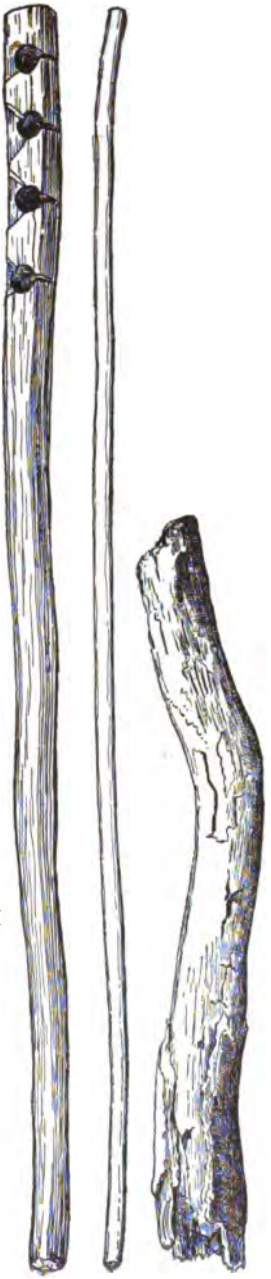


Fig. 10.
FIRE-MAKING SET.
(Cat. No. 19898, U. S. N. M., Moki Indians, Arizona. Collected by Mrs. T. S. Stevenson.)

As to the plan pursued in grinding out fire, Col. James Stevenson informed the writer that they make a slightly concave place where the burnt holes are seen, cut the notch on the side, sprinkle a little fine sand on the concavity, set the end of the round stick on the sand and roll it rapidly between the palms of the hands, pressing down hard. The "sawdust," Colonel Stevenson called it, oozes out of the notch and forms a small mass, which on blowing slightly becomes a burning coal, and the application of a little tinder creates a blaze. For preserving the fire for any length of time they use a piece of decayed wood. (Figs. 11 and 12.)

Viewed in another aspect than as an implement of necessary or common use, this set is an important cult apparatus in the wonderfully complicated religious worship of the Zuñis. These people make the sacred fire that burns always in their estufas by friction of wood that has been wet. New fire is made at the beginning of their new year with great ceremony. The house is swept and everything is moved out of it until the fire is made. Their regard for fire and their customs with reference to it add



Figs. 11 and 12.
FIRE-MAKING SET AND SLOW MATCH.
(Cat. Nos. 157908 and 69850, U. S. N. M., Zuñi Indians, New Mexico. Collected by James Stevenson.)

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them to the list of peoples who have held it in similar reverance and have practiced similar customs all over the world, ranging widely in time. The wetting of the drill, increasing their labor, may be done to please their Gods.

This art must have been practiced for a long time in this region, for Mr. Henry Metcalf found a hearth (Fig. 13) with three fire-holes in a cave-dwelling at Silver City, New Mexico. It is apparently very ancient. The wood is much altered and has become heavy by impregnation with some salt, probably niter.

The Apaches and Navajos belong to the great Athapascan stock, that ranges so widely in North America. Capt. John G. Bourke, U. S. Army, collected the hearth of yucca wood shown (Fig. 14), and says:

> With the stick you now see, the Apache Indians in my presence made fire in not quite eight seconds by the watch, and one asserted that he could make it in a number of motions, which, on the watch, occupied exactly two seconds, that is, under most favorable circumstances. The experiments, made under my own observation, ran all the way from eight to forty-seven seconds; sand is generally used, although not essential to success.

Fig. 13.
LOWER STICK OF FIRE-MAKING SET.
(Cat. No. 35268, U. S. N. M. From a cave at Silver City, New Mexico. Collected by Henry Metcalf.)

Captain Bourke's observation is very interesting, as it records the fact that the Apache is the most skillful fire-maker in the world. Many other tribes can make fire in less than a minute; I think by far the majority of them, but there is no eight-second record, while if he could prove his ability to do it in two seconds he would arrive at the facility of striking a match.

Mr. William F. Corbusier has noticed the fire-making of the Apache-Yumas of Arizona (Yuman stock).* They use a drill about 2 feet long and one-half inch thick, made of *o-oh-kad-je*, or "Fire-stick bush." Its end is dipped in sand and drilled on a sott piece of agave or yucca stalk held down by the feet. They carry a slow torch of dead wood (spunk)

Fig. 14.
LOWER PIECE OF FI
MAKING SET.
(Cat. No. 130672, U. S. N. Apache Indians, Ariz Collected by Capt. John Bourke, U. S. A.)

*American Antiquarian. Mendon, Illinois, September, 1886. VIII, p. 283.

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and also use a flint and steel. For tinder they use dry grass or bark fiber. They use also a fungus, *polyporus* sp., for the same purpose.

Another reference to the fire making of this stock (Yuman) is found in the translation by the late Dr. Charles Rau of the writings of Father Baegert on the Californian Peninsula.* He says:

To light a fire, the Californian makes no use of steel and flint, but obtains it by the friction of two pieces of wood. One of them is cylindrical and pointed at one end, which fits into a round cavity in the other, and by turning the cylindrical piece with great rapidity between their hands, like a twirling-stick, they succeed in igniting the lower piece if they continue the process for a sufficient length of time.

The Navajo fire-set looks very much like a mere makeshift. The hearth is a piece of yucca stalk and the fire-holes have but a shallow side notch. The drill is a broken arrow shaft, to which has been rudely lashed with a cotton rag a smaller piece of yucca wood (fig. 15). This carelessness, which it is rather than lack of skill, is characteristic of the Navajos in their minor implements. They resemble the crude Apache in this. One thinks of the Navajos only with regard to their fine blanket weaving and silver working, so well presented by Dr. Washington Matthews in the reports of the Bureau of Ethnology, and does not consider their arts in other lines.†

Mr. Thomas C. Battey, a Friend, long missionary among the Indians, kindly gives a description of the Kiowan fire-making process, not now practiced among them, but shown to him as a relic of an abandoned art:

A piece of very hard and coarse, rough-grained wood, perhaps 8 inches in length, 2 in width, and three-fourths of an inch in thickness is procured. In one side of this and near one edge several holes are made, about one-half an inch in diameter by five-eighths of an inch in depth, rounded at the bottom, but left somewhat rough or very slightly corrugated. In the edge nearest these holes a corresponding number of smaller and tapering holes are made, opening by a small orifice into the bottom of each of the larger ones. These are made very smooth.

A straight stick, also of hard, rough-grained wood, about 8 or 10 inches in length, about the size they usually make their

Fig. 15.
FIRE-MAKING SET.
(Cat. No. 9555, U. S. N. M. Navajo Indians, New Mexico. Collected by Edward Palmer.)

*Smithsonian Report. 1865. p. 367.

†Dr. Matthews's mountain chant of the Navajos, in the fifth annual report (1883-'84) of the Bureau of Ethnology, gives some very striking ceremonial uses of fire. No ethnologist should fail to read this important contribution to science.

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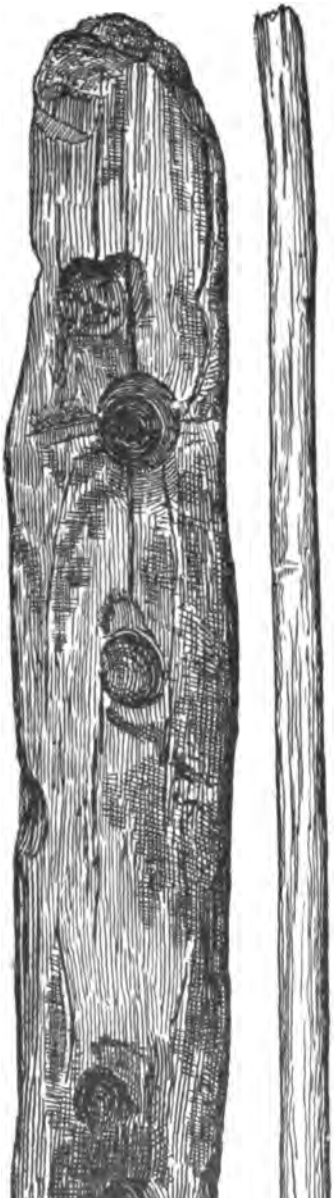

Fig. 16.

FIRE-MAKING SET.

(Cat. No. 15386, U. S. N. M. Natives of Talamanca, Costa Rica. Collected by Prof. W. M. Gabb.)

arrows or larger, is provided. Both ends of this are rounded, but one end is made smooth, the other is left slightly rough. The dried pith of some kind of reed, or more probably of the yucca, some fibers of the same loosely prepared like hackled flax, some powdered charcoal, I think formed by charring the yucca, and a piece of hard thick leather similar to sole leather, completes the outfit, which is carried in a leather bag made for the purpose. The first described piece of wood is placed upon the knees of the operator with a quantity of the fibrous substance beneath it which has been powdered with charcoal dust; some of the latter is put into one of the holes and the rough end of the stick inserted, the other end is put into an indentation of the leather placed under the chin, so that a gentle pressure may be exerted. The spindle is then rapidly revolved by rolling it one way and the other between the hands. The friction thus produced by the rubbing of the roughened surfaces ignites the fine coal dust, which, dropping as sparks of fire through the orifice at the bottom of the hole, falls into the dry fibrous preparation, thus igniting that, then by the breath blowing upon it a flame is produced and communicated to some fine dry wood and a fire is soon obtained. The whole operation occupies but a few minutes.

One of the rudest fire-making appliances in the Museum was collected by Prof. W. M. Gabb, at Talamanca, Costa Rica. The hearth is a rude billet of charred, black wood, resembling mahogany. It has central holes, with no gutter usually, though sometimes a shallow notch is cut on both sides of the fire-hole. The drill is a light branch, rather crooked, but dressed down roughly with a knife. Another hearth is of partly decayed, worm-eaten wood; with this a hard wood drill can be used, the hearth wasting away instead of the drill (fig. 16.) The absence of any fire slot, that is, the use of the central fire-hole, is worthy of notice in this locality. I have only observed its use in various parts of the Eskimo area, from East Greenland to Kadiak; outside of this range I have not noticed it anywhere else among the present tribes of the world. From de-

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scriptions given it seems to have been practiced by the Caranchua Indians, a recently extinct tribe in Texas and Mexico. (See below.)

These specimens from Costa Rica are the crudest fire tools, not to be mere make-shifts, that have come to my notice or have been described in the literature examined. The Costa Rican Indians are very interesting in their preservation of several other arts that may justly be classed among the most ancient. One may be mentioned, that of bark cloth making. Professor Gabb made quite a collection from Talamanca, but has not left any notes on these remarkable people, who are well worthy of the careful study of ethnologists.

A curious modification of this central hole plan is figured and described in Oviedo, folio 90, as occurring in Hispaniola; that is, the West Indies, Hayti, San Domingo, etc. He says that "two dry light sticks of brown wood were tied firmly together, and the point of the drill of a particular hard wood was inserted between the two and then worked." Mr. H. Ling Roth* thinks that if one can judge from the illustration (which is a miserable one) in Benzoni's work, the natives of Nicaragua also used three sticks in making fire. Benzoni, however, says:†

All over India they light fire with two pieces of wood; although they had a great deal of wax, they knew no use for it, and produced light from pieces of wild pine wood.

From Oviedo's description I am inclined to believe that the dust in which the fire starts was allowed to fall below on tinder placed beneath the hearth.

Through the kindness of Prof. F. W. Putnam, curator of the Peabody Museum, at Cambridge, Mass., I have received an extract from a manuscript written by Mrs. Alice W. Oliver, of Lynn, who, as a girl, in 1838 resided on Matagorda Bay, and learned the language and customs of the Caranchua Indians, a separate stock, now thought to be extinct.

Mrs. Oliver says:

After the hut is built a fire is made, the squaws usually begging fire or matches from the settlers, but, in case their fire is out and they have no other means of kindling it, they resort to the primitive method of producing it by friction of wood. They always carry their fire-sticks with them, keeping them carefully wrapped in several layers of skins tied up with thongs and made into a neat package; they are thus kept very dry, and as soon as the occasion for their use is over, they are immediately wrapped up again and laid away.

These sticks are two in number. One of them is held across the knees as they squat on the ground, and is about two feet long, made of a close-grained, brownish-yellow wood (perhaps pecan), half round in section; the flat face, which is held upward, is about an inch across. Three cylindrical holes about half an inch in diameter and of equal depth, the bottoms slightly concave, are made in it. The three holes are equally distant apart, about 2 inches, and the first one is the same distance from the end of the stick, which rests upon the right knee. In one of the holes is inserted the slightly-rounded end of a twirling stick made of a white, softer kind of wood, somewhat less than the diameter of the hole, so as to turn easily, and about 18 inches long.

*The Aborigines of Hispaniola. J. Anthrop., Inst. Gt. Britain and Ireland, XVI, p. 282.

†G. Benzoni.—History of the New World. Hakluyt Society, XXI, p. 151.

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Holding the twirler vertically between the palms of the hands, a gentle but rapid alternating rotary motion is imparted. After continuing this for about five minutes the abrasion of the softer wood causes a fine, impalpable dust to collect in the hole, from which soon issues a thin, blue line of smoke.

As soon as the Indian sees this he quickly withdraws his twirler with one hand, while with the other he catches up and crushes a few dry leaves previously placed on a dry cloth close by (having been produced from thin wrappings, in which they have been preserved for this very purpose, to serve as tinder), and quickly but lightly sprinkles them in and around the hole, over which both hands are now held protectingly, the head bent down, and the incipient fire fanned to a blaze with the breath. As soon as the blaze has fairly caught, the stick and tinder are deftly turned over upon a little pile of dry twigs and leaves, got ready beforehand, and the fire is started.

This operation of getting fire is always performed by the men, and not by the squaws. The fire is invariably built in the center of the hut, upon the ground, and, is usually kept burning, for the Indians never slept regularly, but whenever they pleased, often asleep in the day time and awake nights, or *vice versa*, as they felt inclined.

The Iroquois are unique in America, and perhaps in the world, in making fire with the pump-drill. Several other tribes in America use the pump drill to pierce stone and shell, for which purpose it is an excellent tool, but the mechanical difficulties lying in the way of making fire with it have only been overcome by the Iroquois. Pump-drills are intended for light, fine work, with uniform, light pressure; hence, with little friction. The Iroquois have added this element by increasing the size of the balance-wheel and stock. Mr. Morgan, in his "League of the Iroquois," p. 381, figures a fire drill with a wooden stock 4 feet long and 1 inch in diameter. This stock has at the upper end a string and bow, while near the lower end is a "small wheel." Mr. Morgan says this is "an Indian invention of great antiquity."

Mr. J. N. B. Hewitt, of the Bureau of Ethnology, has kindly given the writer a set of apparatus and valuable information with reference to fire-making among the Iroquois, especially the Onondagas and Tuscaroras. He states that at times when there is disease among the people they say it is because the fire is "old." They then determine to make "new fire," so all fires are put out and two slippery-elm logs are selected and one of these is laid on the ground and a V-shaped notch is cut on the upper side. In this notch some tinder of dry slippery-elm is put and three (mystic or sacred number) men at either end work the other log backward and forward until fire is generated, and from this the fires are lighted. He believes that the new fire is made at the winter feast of the Iroquois. They say that the drill with the weight is their own invention. They use elm for that also. In making the pump-drill they sometimes cut an elm sapling and work out the drill, leaving the tap root for the fore part, the knot for the weight, and part of the stem for the top part of the drill.

It is not improbable that the Iroquois — the most advanced Indians in some respects on the continent, invented this use of the widely diffused pump-drill. It scarcely seems to be a practical way to make fire,

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and, despite the assurances and belief of the Iroquois, is not very ancient, but was perhaps suggested by the white man. Indeed, Pere Lafitau, that keen and careful observer, in his "Moeurs des Sauvages Ameriquains," written in 1724, on page 242, gives a description of Indian fire-making that includes the Iroquois. He says:

The Hurons, the Iroquois, and the other peoples of North America do not make fire from the veins of flint, but rub two pieces of wood one against the other.

Then follows a description of fire-making, taken probably from the Iroquois, that is as good an account of the Indian apparatus and the way of working it as exists in the literature of the subject.

The drill was sufficient for its time for the reason that there was at that period rarely necessity for generating fire; the art of fire preservation was at its height.

The Cherokees, the most southerly of the Iroquois, Mr. James Mooney states, kept fire buried in the mounds upon which the council houses were built, so that if the house was destroyed by enemies the fire would remain there for a year or so. The Cherokees use the simple rotation apparatus, and, as far as Mr. Mooney can ascertain, never used the pump-drill. They have a tradition that fire originally came out of an old hollow sycamore tree (*Platanus occidentalis*).

Capt. John Smith tells how the Indians of Virginia made fire. He says:

Their fire they kindled presently by chafing a dry pointed sticke in a hole of a little square piece of wood, that firing itselfe, will so fire mosse, leaves, or anie such like drie thing that will quickly burn.*

Writing in the first quarter of the next century, Beverley says:

They rubbed Fire out of particular sorts of Wood (as the Ancients did out of the Ivy and Bays) by turning the end of a Piece that is soft and dry, like a Spindle on its Inke, by which it heats and at length burns; to this they put sometimes also rotten Wood and dry leaves to hasten the Work. †

Loskiel says of the Delawares:

Formerly they kindled fire by turning or twirling a dry stick, with great swiftness on a dry board, using both hands.‡

The Cherokees used for a drill the stalk of a composite plant (senecio), and twirled it on a piece of wood. The art has long been out of common use, but they employed the wooden drill to make fire for the Green Corn Dance into the present century, though flint and steel was then in vogue. Sometimes they passed the bow over drill. The tinder was of a fungus or dried moss. Mr. James Mooney collected this information from some of the older men of the tribe in North Carolina, who have retained the ancient customs and traditions, which the part of the tribe removed to the West has entirely lost.

The Creeks (Muskogean stock) had a regularly authorized fire-maker, who early in the morning made fire for the Green Corn Dance. The

* Smith.—The Natural Inhabitants of Virginia. English Scholars' Library. No. 16, p. 68.

† Beverley.—History of Virginia. 1722. 197, 198.

‡ Loskiel.—History of the Mission of the United Brethren. London, 1794. p. 54.

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apparatus that he made use of was four sticks placed end to end to form a square cross. This was oriented, and at the junction of the sticks new fire was made by friction.*

The Choctaws (also Muskogean) of Mississippi, Mr. M. F. Berry writes, make fire in the following way: One stick of dry wood that has a hole in it, with a smaller hole at the bottom going through, is placed between the feet. Another piece made round and about 3 feet long is made to revolve rapidly back and forth between the hands in the hole, and the fire drops through the small hole below. When new fire was wanted for the Green Corn Dance, or other purposes, three men would place themselves so that each in turn could keep the stick revolving without a stop, until fire would drop down through the hole, which was nursed with dry material into a flame.

This form of the fire hearth is not represented in the collections of the Museum; the only other description of a process closely like it was given by Mr. Thomas C. Battey, who observed it among the Kiowas. It was shown him at that time as a revival of the ancient method (p. 543). The pierced fire hearth is somewhat impracticable, except in the Malay sawing method. In the rotary drill the small hole would come over the axis of least friction and heat. Unless provision was made for the dust to fall freely underneath by a double cone perforation worked from both sides the dust is likely to become obstructed and smother the fire. It will be seen, too, that it departs very much from the simplicity of the usual fire drill in the fact that a hole must be made through the piece of wood, a matter of some difficulty before the introduction of iron awls.

The Seminoles of Florida, the most Southern Muskoki, have neglected the art of fire making by simple friction, unless at the starting of the sacred fire for the Green Corn Dance, says Mr. Clay MacCauley.† A fire is now kindled either by the common matches, *ma-tci*, or by steel and flint.

Thus it is seen that wherever in the earlier period of the exploration in this country the observation has been made, the Indian, almost without exception, was found to be using the friction apparatus, consisting of two sticks of wood. Some tribes had improved on the working of the invention, while a very few others had perhaps arrived at the use of the higher invention of the flint and pyrites.

Returning to the tribes of the wide central plains of our country, we find that the flint and steel soon displaced the fire-sticks, except for religious purposes. The Mandans, of the great Siouan stock, were using flint and steel at the time of Mr. Catlin's visit in 1832.‡

There seems to be a great misapprehension among some of the writers

* Benj. Hawkins' Sketch of the Creek Country. 1798–'99. 68–72, cited in Pickett's History of Alabama. I, p. 108.

† Fifth Annual Report of the Bureau of Ethnology. 1883–'84. p. 518.

‡ The George Catlin Indian Gallery. Smithsonian Report. 1885. II, p. 456.

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on ethnology, as to the general use of the bow-drill among the Indians. In mentioning that the Sioux use the bow-drill, Schoolcraft is quoted as authority. As a matter of fact the reference is to a "made-up" figure of a bow-drill set, marked "Dacota." On the same plate there is a representation of an Iroquois pump-drill that is obviously wrong. The lower part of the plate is taken up by a picture of an Indian woman (presumably Californian) pounding acorns in a mortar. To complete the absurdity the whole plate is entitled "Methods of obtaining fire by percussion," and is placed in the text of a *questionnaire* on the Californian Indians, opposite a description of the Californian way of making fire by twirling two sticks.*

Mr. Schoolcraft is not to blame for this state of affairs; in those days illustrations were not ethnological, they were "padding" gotten up by the artist. Nowhere in his great work does Mr. Schoolcraft describe either the Dacota or Iroquois drill. Among the northern Indians in central and northern Canada, however, the bow is used.

Sir Daniel Wilson, in his work on Prehistoric Man, notes that the Red Indians of Canada use the drill bow. In August, 1888, at the meeting of the American association, at Toronto, he gave an account of the facility with which these Indians make fire. He said that at Nipissing, on the north shore of Lake Superior, while he was traveling in a pouring rain, and not having the means wherewith to light a fire, an Indian volunteered to light one. He searched around for a pine knot and for tinder, rubbed up the soft inner bark of the birch between the hands, got a stick from a sheltered place, made a socket in the knot and another piece of wood for a rest for the drill, tied a thong to a piece of a branch for a bow. He put the tinder in the hole and rested his breast on the drill and revolved it with the bow and quickly made fire.

It is perhaps true that some of the Dacotas did use the bow at times, but it is not correct to place it as the customary tool of the whole stock. On the contrary, there is evidence that they used the simple means. Dr. J. Owen Dorsey writes:

> I was told in 1879 by the late Joseph La Flèche, that the Omahas, prior to the advent of the white men, made fire by using pieces of the "du-à-du-á-hi," a grass (?) that grows in the Sand Hill region of Nebraska, near the sources of the Elkhorn River. One piece was placed horizontally on the ground, and a slight notch was cut at one end, wherein a few grains of sand were put. The other stick was held between the palms of the hands, with one end in the notch of the horizontal stick, and then rolled first in one direction then in the other till fire was produced. A fresh notch was made in the first stick whenever the old one became useless, and so on until it became necessary to procure a new stick.

In the Green Corn Dance of the Minitaries, another Siouan tribe, the "corn is boiled on the fire, which is then put out by removing it with the ashes and burying them. New fire is made by desperate and painful exertion, by three men seated on the ground facing each other and violently drilling the end of a stick into a hard block of wood by roll-

* Schoolcraft.—Indian Tribes. 1851–60. III, Pl. 28.

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ing it between the hands, each one catching it in turn from the others without allowing the motion to stop until smoke, and at last a spark of fire is seen and caught in a piece of spunk, when there is great rejoicing in the crowd."* The desperate exertion was not necessary, except in imitation of the Zuñi fashion of wetting the drill to create sacred fire.

It will be seen from these references given that the Sioux used the customary Indian method. Later, they may have used the bow to expedite the drill when the wood was intractable. The bow may have been borrowed from more northern tribes, the Algonquians are said to use it;† Mr. Thomas C. Battey says that the Sac-Fox Indians (Algonquian stock) used a soft wood drill and a hard wood hearth. "The drill was worked by a bow and the fire caught on the end of the drill and touched to tinder."

Throughout South America the art of fire-making with two sticks of wood is found to be as thoroughly diffused as it is in North America. Many of the tribes still use it; we may say that in all tribes the use of flint and steel was preceded by that of the sticks of wood.

The Guanchos, a mixed tribe of herders on the Pampas of Venezuela, practice a peculiar way of fire-getting. They select a pliant rod, place one end against the breast and the other against the block forming the hearth, *held on a line with the breast.* By pressing against the rod it is bent and turned rapidly around like an auger. This impracticable and no doubt very local method is described by Prof. E. B. Tylor.‡

In Brazil, in the Province of Goyaz, the Chavantes, Cayapós, and Angaytés, use the simple fire drill.§ The Angaytés drill figured looks somewhat like that of the Mokis. It is usually 28^{cm}. long for the hearth, and for the drill 20^{cm}. They use the throat skin of the Nandu, *Rhea Americana*, for a tinder sack. The Lenguas of the same province use a strike a-light consisting of a tinder horn, flint, and steel, which is also figured in the cited report. This set is very interesting, because from it we can say with certainty where the Lengua got it. The steel is the English "flourish," and the flint is the oval, old English shape, probably broken somewhat by blows. The Lenguas, being on the line of travel, have adopted the method from English traders. In Rio Janeiro the Indians had an angular recess at the back of their snuff mills for the purpose of making fire by friction.‖

The Ainos of Japan formerly used fire-sticks, and are said even yet to resort to this method when they have no other means of getting fire. They use also flint and steel, adopted from the Japanese. A specimen (No. 22257) is figured and described on page 583 of this paper. The fire-

* Smithsonian Report. 1885. II, p. 315.

† Sir Daniel Wilson.—Prehistoric Man. II, p. 375.

‡ Darwin.—Narrative of the voyage of the Beagle. III, p. 458. Cited in Early History of Mankind. p. 241.

§ Dr. Emil Hassler.—In Jahrbuch Mittelschweiz. Commerciel. Gesellsch. Aau, Zweiter Band. 1888. 114, 115.

‖ Harper's Monthly Magazine. Nov. 1853. VII, p. 745.

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sticks of the Ainos of Yezo (No. 129970, fig. 17) were loaned to the Museum by Prof. F. W. Putnam, who also secured the following letter of Mr. D. P. Penhallow, who collected the sticks:

At our request the chief brought several fire-sticks to my house, together with the necessary number of men to get fire in the approved style. Upon examination the sticks were found to be from 6 to 9 inches long, and very dry. Our informant stated that they were from the root of the elm *Ulmus campestris*, var. *lævis*, and that it was customary to keep a supply ahead, as the sticks require to be seasoned for about one year, by hanging them from the rafters of the house above the fire. To prepare them for the process of making fire, a shorter stick was cut flat on opposite sides, and about midway of one of the flattened sides a small hole was made with the point of the knife for the purpose of establishing the center of action. Another stick about 9 inches long was then well sharpened at one end. Three men now seated themselves in a circle, facing inward, with the flattened stick notched side uppermost in the center.

The point of the long stick was now placed in the notch, and with the stick in a vertical position and grasped between the extended palms of the hands, a steady and somewhat fast rotating pressure was brought to bear, exactly as in the use of the old-fashioned awl. As soon as the first man became weary, the second brought his hands to bear upon the upper end of the stick, and continued the motion without allowing it to cease. This was repeated as often as necessary until fire was obtained. Owing to the very dry character of the sticks used, the parts in contact rapidly wear away, so that the notch quickly becomes cup-shaped, and the pointed end is correspondingly rounded, while at the same time the powdery product is thrown out, forming a raised ring on all sides. Before long it is observed that the powder acquires a brownish tinge. This gradually deepens as the temperature rises until finally a delicate line of smoke warns the operator that the end is near.

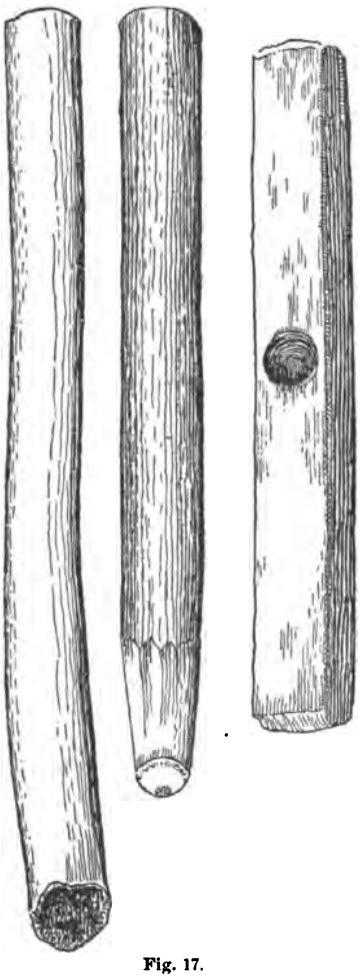

Fig. 17.

FIRE-MAKING SET WITH TOUCHWOOD.

(Cat. No. 129970, U. S. N. M. Ainos of Yezo, Japan. Collected by D. P. Penhallow. Lent by Peabody Museum, through Prof. F. W. Putnam.)

The motion is now continued until the smoke is well established, when the vertical stick is raised, disclosing a spark on its end. The mouth is applied to the opposite extremity, and by means of a few vigorous pulls as if smoking a cigar, owing to the porous nature of the stick, the spark is drawn into a flame.

The actual operation as witnessed by us consumed about two hours, and the Ainos state that the process requires from one and one-half to two and one-half hours.

The sticks figured are the actual ones that were used in the operation above described.

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The Japanese formerly used the simple drill; a few are yet preserved in the temples. Under the name of "Sacred fire drill" it is described* as a board 1 foot wide, 1 foot 4 inches long, 1 inch thick, and with a step 1 inch wide or over on one edge. It has holes and grooves like the Eskimo hearth. The drill is a stick twirled between the hands. The parts are of the *hi-no-ki*, or fire tree, *Chamæcyparis obtusa*. The drill is called *hi-kiri-usu*, or fire drilling mortar. It was and perhaps is yet used for the purpose of drilling fire at the four corners of the temple inclosure to ward off the calamity of fire. They are said also to have used the *rokuro*, or pump-drill. It is interesting to note that the Japanese carpenter's drill with the iron point is rotated between the palms. They are still in use. The one figured is in the Tokio Museum.

Prof. Romyn Hitchcock has kindly allowed a drawing to be made of a photograph which he procured of a sacred fire drill preserved in the temple called Oyashiro, at Idzumo, Japan (fig. 18). The hearth of

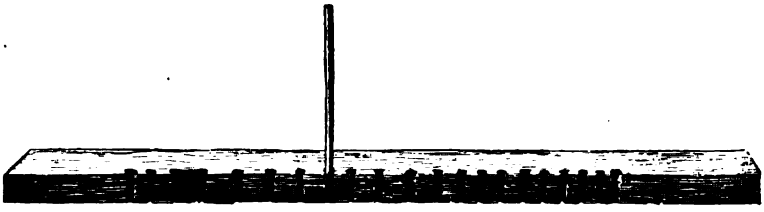

Fig. 18.
SACRED FIRE DRILL.
From photograph of specimen in Tokio Museum. Lent by Romyn Hitchcock.

this set is made of *hi-no-ki* wood and the drill of the *Ut-su-gi*, *Deutzia scabra*.

Professor Hitchcock says:

The fire drill is used at the festivals of the Oyashiro to produce fire for use in cooking the food offered to the gods. Until the temple was examined officially in 1872, the head priest used it for preparing his private meals at all times. Since then it has been used only at festivals and in the head priest's house on the eve of festivals, when he purifies himself for their celebration in the *Imbidous*, or room for preparing holy fire, where he makes the fire and prepares the food.

The art of fire-making by sticks of wood by the method of rotation is, or has been, as far as we know, universal on the African continent as it was in the two Americas at the time of the discovery. There is not a clue as to how the ancient Egyptians generated fire.

The Somalis are a pastoral people of Arab extraction, inhabiting a large maritime country south of the Gulf of Aden. Their fire-sticks (fig. 19) are pieces of branches of brownish wood of equal texture, in fact the hearth has formerly been used as a drill, as may be seen by its regularly-formed and charred end. This is another proof that it is not necessary that the sticks should be of different degrees of hardness. The grain of the wood, that of the drill being against and the hearth

* Trans. Asiat. Soc. Japan. 1878, VI. Pt. II, p. 223.

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with the grain, in effect accomplishes what the use of wood of different qualities results in. The hearth and drill are in the neighborhood of 12 inches long, the former with a diameter of three-eighths of an inch and the latter one-fourth of an inch. They were collected by Dr. Charles Pickering in 1843.

Fig. 19.
FIRE-MAKING SET.
(Cat. No. 125971, U. S. N. M. Somalis, E. Africa. Collected by Dr. Charles Pickering. Lent by Peabody Museum through Prof. F. W. Putnam.)

It is possible that the Somalis may have carried this method with them from Arabia. They conquered this coast, driving back the earlier tribes inhabiting the country in the early part of the fifteenth century. Long since that time, and even now, some Arab tribes practice the drilling of wooden sticks to produce fire.

In eastern equatorial Africa the Wataveita, says Mr. H. H. Johnston, generate fire in the common African way by rapidly drilling a hard-pointed stick into a small hole in a flat piece of wood. An interesting bit of custom comes out in connection with this art among the people. "It is the exclusive privilege of the men, and the secret is handed down from father to son, and never under any conditions (as they say) revealed to women." I asked

Fig 20.
TAVEITA AFRICANS MAKING FIRE.
After H. H. Johnston. (See Jour. Soc. Arts, June 24, 1887.)

one man why that was. "Oh," he said, "if women knew how to make fire they would become our masters."* The figure (fig. 20) shows how this people of the great Bantu stock make fire; this tribe visited by Mr Johnston lives on the slopes of the beautiful Kilimanjaro Mountain.

* J. Anthrop. Inst. Great Britain and Ireland. 1885. XV, p. 10.

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Mr. R. W. Felkin*, in a study of the Maidu or Moru negroes of Central Africa, 5° north latitude, 30° 20′ east longitude, describes the fire-making of that tribe. He says that one piece of wood about the size and shape of a large pencil is rotated in a hole in a flat piece of hard wood. One man holds the wood steady whilst two others take it in turn to rotate the stick. This article of Mr. Felkin's is commended to ethnologists as a model ethnologic study in method and research.

That veteran and renowned explorer, Dr. Schweinfurth, gives the following:

The method of obtaining fire, practiced alike by the natives of the Nile lands and of the adjacent country in the Welle system, consists simply in rubbing together two hard sticks at right-angles to one another till a spark is emitted. The hard twigs of the *Anona senegalensis* are usually selected for the purpose. Underneath them is placed either a stone or something upon which a little pile of embers has been laid; the friction of the upper piece of wood wears a hole in the lower, and soon a spark is caught by the ashes and is fanned into a flame with dry grass, which is swung to and fro to cause a draught, the whole proceeding being a marvel which might well-nigh eclipse the magic of my lucifer matches.†

Kaffir fire-making is described in some detail in the following:

The Kaffir blacksmith never need trouble himself about the means of obtaining a fire. Should he set up his forge in the vicinity of a Kraal, the simplest plan is to send his assistant for a fire-brand from one of the huts. But if he should prefer, as is often the case, to work at some distance from the huts, he can procure fire with perfect certainty, though not without some labor. He first procures two sticks, one of them taken from a soft-wood tree and the other from an acacia or some other tree that furnishes a hard wood. Of course both sticks must be thoroughly dry, a condition about which there is little difficulty in so hot a climate. His next care is to shape one end of the hard stick into a point and to bore a small hole in the middle of the soft stick. He now squats down * * * places the pointed tip of the hard stick in the hole of the soft stick, and, taking the former between his hands, twirls it backwards and forwards with extreme rapidity. As he goes on the hole becomes enlarged and a small quantity of very fine dust falls into it, being rubbed away by the friction. Presently the dust is seen to darken in color, then to become nearly black, and presently a very slight smoke is seen to rise. The Kaffir now redoubles his efforts; he aids the effect of the revolving stick by his breath, and in a few more seconds the dust bursts into a flame. The exertion required by this operation is very severe, and by the time the fire manifests itself the producer is bathed in perspiration.

Usually two men at least take part in fire-making, and by dividing the labor very much shorten the process. It is evident that if the perpendicular stick be thus worked, the hands must gradually slide down until they reach the point. The solitary Kaffir would then be obliged to stop the stick, shift his hands to the top, and begin again, thus losing much valuable time. But when two Kaffirs unite in fire-making, one sits opposite the other, and as soon as he sees that his comrade's hands have nearly worked themselves down to the bottom of the stick he places his own hands on the top, continues the movement, and relieves his friend. Thus the movement of the stick is never checked for a moment, and the operation is consequently hastened. Moreover, considerable assistance is given by the second Kaffir keeping the dust properly arranged round the point of the stick and by taking the part of the bellows, so as to allow his comrade to expend all his strength in twirling.‡

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* Proc. Royal Soc. Edinburgh. Session of 1883–'84. p. 309.

† Schweinfurth.—The Heart of Africa. New York, 1874. I, 531, 532.

‡ J. G. Wood.—The Natural History of Man. I, p. 101.

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It is an anomaly that the African, to light the fire to smelt the iron out of which he forges his remarkable weapons, should use sticks of wood.

2. ESKIMO FOUR-PART APPARATUS.

The arts of the Eskimo yield more satisfactory results to students of comparative ethnology than those of any other people.

In all their range the culture is uniform; one finds this fact forced upon his observation who has examined the series of specimens in the National Museum, where they are arranged in order by localities from Labrador to southern Alaska. Prof. Otis T. Mason's paper on Eskimo throwing-sticks* gave a new interpretation to this fact and powerfully forwarded the study of ethnology by showing the classificatory value of the distribution of an art.

Professor Mason points out that though the Eskimo culture is uniform in general, in particular the arts show the modification wrought by surroundings and isolation—tribal individuality, it may be called—and admit of the arrangement of this people into a number of groups that have been subjected to these influences.

The Eskimo fire-making tools in the Museum admit of an ethnographic arrangement, but in this paper it is not found necessary to make a close study of this kind. From every locality whence the Museum possesses a complete typical set, it has been figured and described.

The Eskimo are not singular in using a four-part apparatus, but are singular in the method of using it. The mouth-piece is the peculiar feature that is found nowhere else.

The drilling and fire-making set consists of four parts, viz:

The mouth-piece,—sometimes a mere block of wood, ivory, or even the simple concave vertebra of a fish, or the astragalus of a caribou. More often, they show great skill and care in their workmanship, being carved with truth to resemble bear, seals, whales, and walrus. The seal is the most common subject. The upper part is almost always worked out into a block, forming a grip for the teeth. The extent to which some of these are chewed attests the power of the Eskimo jaw. Frequently the piece is intended to be held in the hand, or in both hands, hence it has no teeth grip. In the under part is set a piece of stone, in which is hollowed out a cup-shaped cavity to hold the head of the drill. These stones seem to be selected as much for their appearance as for their anti-friction qualities. They use beautifully-mottled stone, marble, obsidian, and ringed concretions.

The drill is always a short spindle, thicker than any other drill in the world. It is frequently of the same kind of wood as the hearth.

The thong is the usual accompaniment of the fire drill. It is rawhide of seal or other animals. The handles have a primitive appearance; they are nearly always made of bears' teeth, hollow bones, or

* Mason.—Throwing-sticks in the National Museum. Smithsonian Report. 1884. II, p. 279.

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bits of wood. Sometimes handles are dispensed with. Mr. Warren K. Moorhead found some perforated teeth in an Ohio mound that in every respect resemble the Eskimo cord handles. They have also been found in caves in Europe decorated with concentric circles like those on the Eskimo specimens.

The bows are among the most striking specimens from this people. They are pared down with great waste from the tusks of the walrus, taking the graceful curve of the tusk. The Museum possesses one 24½ inches long. It is on their decoration that the Eskimo lavishes his utmost art. The bow does not lend itself well to sculpture, as does the mouth-piece; so he covers the smooth ivory with the most graphic and truthful engravings of scenes in the active hunting life in the Arctic, or he tallies on it the pictures of the reindeer, whales, seals, and other animals that he has killed.

Professor Baird was interested more with these bows than with any other Eskimo products, and desired to have them figured and studied.

The distribution of the bow is remarkable. It is not found south of Norton Sound, but extends north and east as far as the Eskimo range. The Chukchis use it,* but the Ostyaks use the ancient breast drill.†

The bow is used by individuals in boring holes. It is presumed that its use as a fire-making tool is secondary, the cord and handles being the older. The difficulty of making fire is greatly increased when one man attempts to make it with the compound drill; at the critical moment the dust will fail to ignite; besides, there is no need of one man making fire; a thing that is for the common good will be shared by all. Hence the cord with handles, which usually requires that two men should work at the drill, is as a rule used by the Eskimo.

Though the Sioux, and some other North American tribes, made use of the bow to increase the speed of the drill, they did not use the thong with handles, nor was the bow common even in tribes of the Siouan stock that had attained to its use (see remarks p. 549). The bow may be termed a more advanced invention, allowing one man with ease to bore holes.

The hearth is made of any suitable wood. It is commonly stepped and has slots. The central hole with groove is also found. These hearths are preserved carefully, and fire has been made on some of them many times.

The distribution of the central-hole hearth (see fig. 21, pl. LXXIV), and the slot-and-step hearth (see fig. 36), is rather striking. The central holes are found in the specimens observed from the north coast of Alaska, Insular British America, and Greenland, exclusively. The stepped hearth with edge holes and slots is by far the more common in western Alaska, though the other method crops out occasionally; both ways are sometimes used in the same tribe. More often, the central holes are bored

*Nordenskiöld.—Voyage of the *Vega*. London, 1881. II, p. 121.
†Seebohm.—Siberia in Asia. p. 109.

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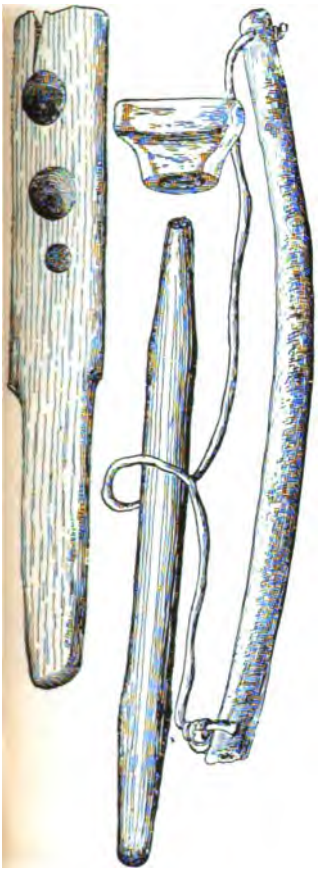

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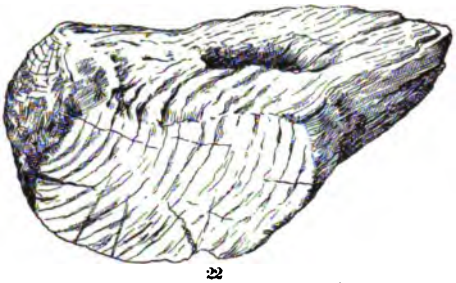

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Figs. 21, 22. FIRE-MAKING SET AND EXTRA HEARTH. Cat. No. 10258, U. S. N. M. Frobisher Bay. Collected by Capt. C. F. Hall.

Fig. 23. MOSS IN A LEATHERN CASE. Cat. No. 10191, U. S. N. M. Collected by Capt. C. F. Hall.

Fig. 24. BORING-SET. Cat. No. 34114, U. S. N. M. Cumberland Gulf. Collected by L. Kumlein.

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on a groove (fig. 34), which collects the ground-off particles and facilitates ignition. Rarely fire is made by working the drill on a plane surface, in single, non-connecting holes.

The difference between these features is, that it is found to be more difficult to get fire by a single hole without groove, or slot, than when the latter features are added. The powder forms a ring around the edge of the hole, is liable to be dispersed, and does not get together in sufficient amount to reach the requisite heat for ignition. Of course this is obviated when a second hole is bored connecting with the first, when the latter becomes a receptacle for the powder.

It is found that these different ways are due to environmental modification, showing itself as remarkably in fire-making, as in any other Eskimo art. Both the stepped and central-hole hearth are different devices for the same end. The step on the hearth is to keep the pellet of glowing powder from falling off into the snow, so universal in Eskimo-land; hence, the simple hearth of primitive times and peoples of warmer climates has received this addition. The same reason caused the Eskimo to bore the holes in the middle of the block.

By following the distribution of the center hole method, a clew may perhaps be gotten to the migrations of the Eskimo.

From Labrador to Norton Sound, by the collections in the Museum, the center hole is alone used; south of Norton Sound both methods prevail, with a preponderance of the stepped-hearth species. The step seems to be an addition to the Indian hearth; the center is an independent invention.

The operation of the drill is well told in the oft-quoted description by Sir. E. Belcher. The writer can attest to the additional statement, that the teeth of civilized man can scarcely stand the shock. He says:

> The thong of the drill bow being passed twice around the drill, the upper end is steadied by a mouth-piece of wood, having a piece of the same stone imbedded, with a counter-sunk cavity. This, held firmly between the teeth, directs the tool. Any workman would be astonished at the performance of this tool on ivory; but having once tried it myself, I found the jar or vibration on the jaws, head, and brain, quite enough to prevent my repeating it." *

The ethnographical study of the Eskimo fire-drill begins with Labrador, including Greenland and following the distribution of the people among the islands and around the North American coast to Kadiak Island and the Aleutian chain. The following is an interesting account from Labrador, showing what a man would do in the exigency:

> He cut a stout stick from a neighboring larch, and taking out the leather thong with which his moccasins were tied, made a short bow and strung it. He then searched for a piece of dry wood, and having found it, cut it into shape, sharpened both ends, and twisted it once around the bowstring; he then took a bit of fungus from his pocket and put it into a little hole which he made in another dry piece of wood with the point of the knife. A third piece of dry wood was fashioned into a handle for his drill. †

* Trans. Ethnol. Soc. London, 1861. p. 140.

† Hind.—Labrador. I, p. 149.

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Eskimo in other localities often use such make-shifts. Cup cavities are often observed in the handles of knives and other bone and ivory tools where they have used them for heads of the fire-drill.

Cumberland Gulf is the next locality to the northward. There are several specimens in the collection from this part of Baffin Land, procured by the famous explorer, Captain Hall, and the less known, but equally indefatigable Kumlein. The fire-making implements from Cumberland Gulf have a markedly different appearance from those of any other locality in the Eskimo area. They have a crude look, and there is a paucity of ornamention unusual among this people. The drill bow is one of the things which the Eskimo usually decorates, but these bows have not even a scratch.

It can be inferred that in Baffin Land, more unfavorable conditions prevail than in southern Alaska. It must be this cause coupled with poor food supply, that have conspired to make them the most wretched of the Eskimo.

The hearth (fig. 21, pl. LXXIV) is of drift oak. It was collected at Frobisher Bay by Capt. Charles F. Hall. It has central holes, and appears to be very unfavorable wood for fire-making. The block hearth is also from Frobisher Bay (fig. 22, pl. LXXIV). It is an old piece of hemlock, with two central communicating holes. The mouth-piece is a block of ivory. Another mouth-piece is a bit of hard wood soaked in oil; it was used with a bone drill having an iron point. A very small, rude bow goes with this set (fig. 24).

Our knowledge of eastern Greenland has been very much increased by the explorations of Holm and Garde, who reached a village on the east coast never before visited by a white man. Extensive collections were made, both of information and specimens. In reference to fire-making, Mr. Holm reports:

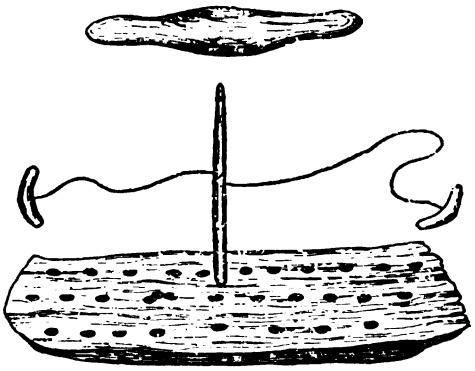

Fig 25.
FIRE-MAKING SET.
(Angmagsalik Eskimo, E. Greenland. Copied from G. Holm's Ethnologisk af Angmagsalikerne, 1887.)

"They make fire by turning a hard stick, of which the socket end is dipped in train oil, very rapidly around by means of a sealskin thong with handles. This stick is fixed at one end into a head set with bone, and the other end is pressed down into a cavity on the lower piece of wood (fig. 25). Therefore there must be two persons in order to make a fire. One turns the drill with the cord, while the other presses it down on the hearth; both support the block with their feet. As soon as the dust begins to burn they fan it with the hand. When it is ignited, they take it and put it into dried moss (*sphagnum*), blow it, and soon get a blaze. In this way they make a fire in an incredibly short time."*

*Danish Umiak Expedition to Eastern Greenland, 1888. p. 28. Plate XIV contains the figure.

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In the preliminary report, Mr. Holm gives the time at almost less than half a minute. It was made by the Eskimo, Illinguaki, and his wife, who, on being presented with a box of matches, gave up their drill, saying that they had no farther use for it.

In the same report Mr. Holm gives an interesting note. He says:

This fire apparatus is certainly better developed than that which has been described and drawn by Nordenskiöld from the Chukchis (Voy. of the *Vega*, II, p. 126). The principle is the same as the Greenlander's drill, which they employ for making holes in wood and bone, and which is furnished with a bow and mouth-piece." (fig. 26.)

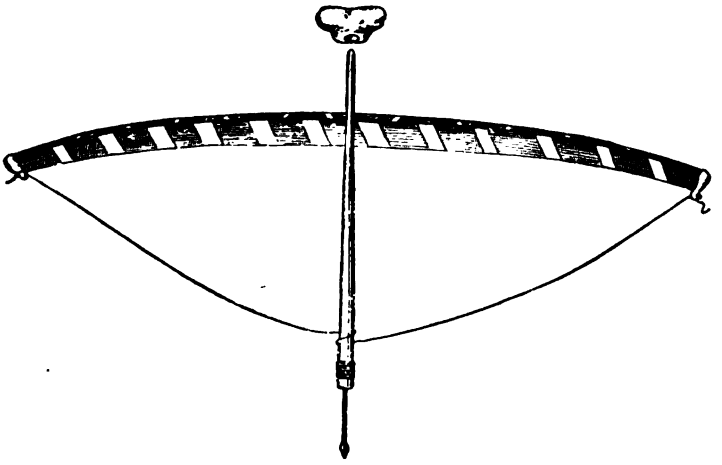

Fig. 26.
BORING SET.
(Augmagsalik Eskimo, E. Greenland. G. Holm's Ethnologick of Angmagsalikerne.)

The central holes of this hearth are worthy of note, occurring in the farthest eastern locality of the Eskimo, and in Labrador.

Western Greenland.—The material in the Museum from western Greenland is very scanty. The southern coast has been settled for so long a time that the Eskimo and many of their arts have almost become extinct. No view of fire-making in Greenland would be complete without Davis's quaint description of it, made three hundred years ago, but it was the upper end of the spindle that was wet in Trane. A Greenlander "begaune to kindle a fire in this manner: He tooke a piece of a boord wherein was a hole half thorow; into that hole he puts the end of a round sticke like unto a bedstaffe, wetting the end thereof in Trane, and in a fashion of a turner with a piece of lether, by his violent motion doeth very speedily produce fire."†

Eskimo graves and village sites yield evidence also that the fire-making tools were not different from those at present used higher north along the coast, and on the east coast.

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* Danish Umiak Expedition. Preliminary Report, p. 208. This seems scarcely what would be inferred from the development of these inventions.

† Hakluyt Society. III, p. 104.

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Dr. Bessels, speaking of Itah Eskimo of Foulke Fiord in Smith Sound, says: "The catkins of the arctic willow are used as tinder to catch the sparks produced by grinding two pieces of stone. Also the widely diffused 'fire-drill' is found here; the spindle is held between a piece of bone and a fragment of semi-decayed wood, and is set in motion by the well-known bow, and is turned until the wood begins to ignite."*

Fig. 28.
LOWER PART OF FIRE-MAKING SET (on one end is gum for cement).
(Cat. No. 1978, U. S. N. M. Mackenzie River, B. C. Collected by B. R. Ross.)

The "fire-bag" is an accompaniment to all sorts of fire-making apparatus. The fire-bag shown (fig. 27, pl. LXXV) was collected by Captain Hall, at Holsteinberg, western Greenland in 1860. It is made of sealskin, and is a good specimen of the excellent needlework of these Eskimo. It was used to carry, more especially, the fire-drill and tinder which require to be kept very dry.

There is a wide gap in the collections of the Museum between the locality of the specimen just mentioned, and the fire hearth from the Mackenzie River (fig. 28). This specimen is from Fort Simpson presumably, where B. R. Ross collected. It is said to be difficult to discriminate the Eskimo from the Indian on the lower Mackenzie. This hearth may be Indian, as it has that appearance; besides, no Eskimo hearth yet observed has side holes and slots like this without the step. The Indians of this region are of the great Athapascan stock of the North. The close resemblance of this stick to the one from the Washoans of Nevada has been commented upon. (See fig. 6, p. 537.)

There is also a very fine old central-hole hearth from the Mackenzie River, collected also by Mr. Ross. It is a rough billet of branch wood, cut apparently with an axe, or hatchet (fig. 29). It is semi-decayed and worm-eaten. It has ten central holes where fire has been made; they are quite deep, forming a gutter in the middle of the hearth. There is, as can be seen, no need of a groove, as the dust falls over into the next hole, collects in a mass, and ignites.

Fig. 29.
LOWER PART OF FIRE-MAKING SET.
(Cat. No. 1983, U. S. N. M. Eskimo of Mackenzie River, B. C. Collected by B. R. Ross.)

* Die amerikanische Nordpol-Expedition. Leipzig. p. 358.

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Fig. 27. FIRE-BAG. Cat. No. 10128, U. S. N. M. Eskimo of Holsteinberg, West Greenland. Collected by Capt. C. F. Hall.

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The Anderson River set is a very complete and interesting outfit. It was collected many years ago by C. P. Gaudet. The parts are small for convenience of carrying. It is the custom of those who live in snow-covered regions to wrap the drill and hearth together very carefully to keep them dry, as these are the essential parts of the apparatus. It does not matter about the mouth-piece or bow. In this example there is a groove cut along the bottom of the hearth in order to facilitate tying the drill and hearth securely together. The hearth is a square block of soft wood with three central holes (fig. 30).

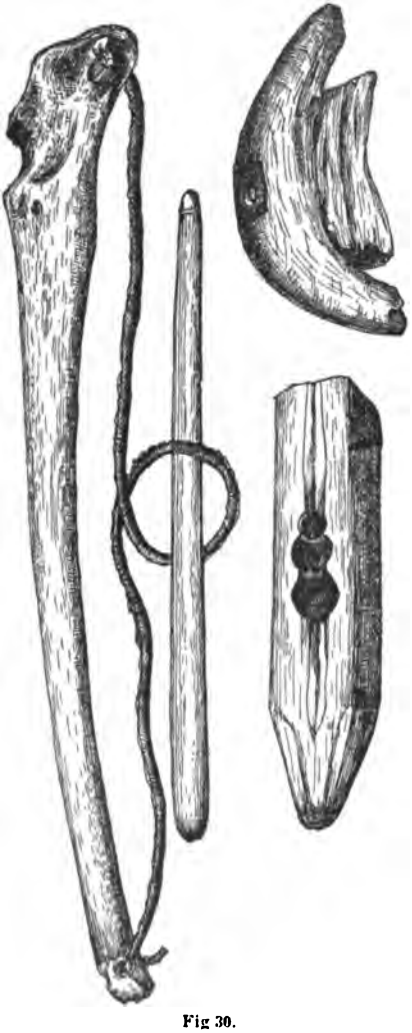

Fig 30.
FIRE-MAKING SET.
(Cat. No. 1227 U. S. N. M. Eskimo of Anderson River, B. C. Collected by C. P. Gaudet.)

The other parts of this set are also worthy of consideration. The mouth-piece is set with a square piece of black stone. The part held in the mouth is very much chewed. One of the wings has a hole for tying, as has the hearth. This is an usual Eskimo precaution to prevent small objects from being lost in the snow. The drill is short, being only 7 inches long. The bow is the fibula of a deer, pierced at each end for the frayed thong of sealskin. It has a primitive look, but it admirably serves its purpose.

The Point Barrow set was collected by the most successful expedition under charge of Lieut. P. H. Ray, U. S. Army. The knuckle-bone of a deer serves as a mouth-piece, the cup cavity and its general shape fitting it for the purpose admirably.

The drill is regularly made of light pine wood; it is slightly smaller in the middle. The hearth is a rudely rounded piece of pine. A fragment has been split off, and on this surface a groove has been cut and three fire-holes bored along it. The thong is without handles; it is used to tie the parts together when they are not in

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use. A bunch of willow twigs, the down of which is used as tinder, is also shown (fig. 31).

This set is especially interesting, because it shows the degeneration of an art. The fire-drill is so rarely used at Point Barrow, Mr. John Murdoch says, that it was not possible to get a full set devoted to that purpose. Those here shown are a make-shift. The method only survives by the conservatism of a few old men of the tribe, who still cling to old usages. One of these made the drill for Lieutenant Ray, telling him that it was the kind used in old times. It seems primitive enough; the knuckle-bone might well have been the first mouth-piece. The Eskimo farther east sometimes use a fish vertebra for the same purpose; one from the Anderson River has this. The cord without handles is undoubtedly the earliest form also.

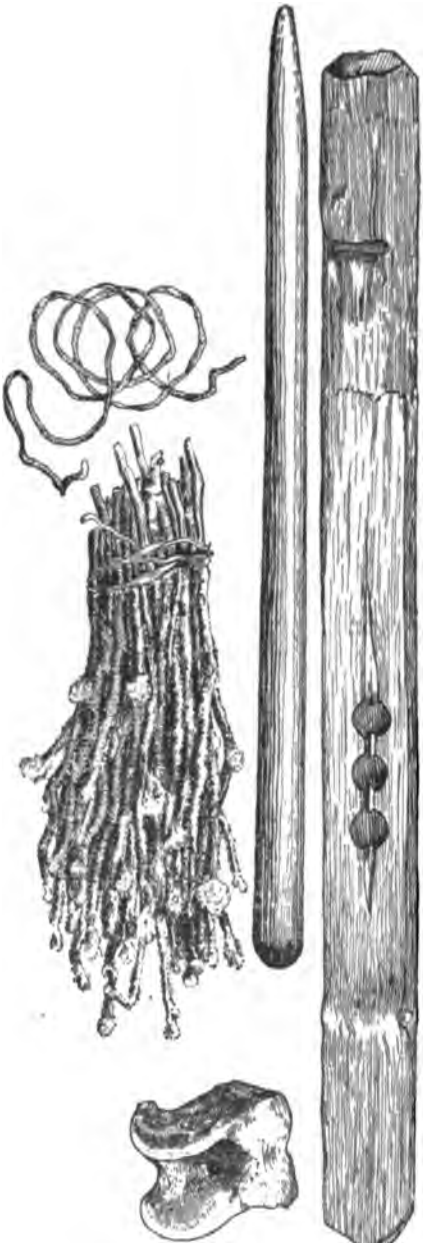

Fig. 31.

FIRE-MAKING SET (with mouthpiece of deer's knuckle-bone, thong, and tinder of willow catkins)

(Cat. No. 80822, U. S. N. M. Eskimo of Point Barrow, Alaska. Collected by Lieut. P. H. Ray, U. S. A.)

The small wooden and bone mouth-pieces of the Eskimo east of Point Barrow to Cumberland Gulf seem to be copies of the deer knuckle-bone. Another primitive adaptation is found in an Anderson River bow, which is made of the fibula of a deer (see fig. 30).

The fire-making drill collected from the Chukchis by the *Vega* expedition in the Cape Wankerem region, in northeastern Siberia, about the same latitude as Point Barrow, is figured in Nordenskiöld's Report.* It is worked by a bow, and the drill turns in a mouth-piece of a deer astragalus like the Point Barrow specimen. The block has central holes, with short grooves running into each one.

Nordenskiöld's description of the manner of making fire is very de-

* Nordenskiöld.—Voyage of the *Vega*. London, 1881. II, 121, 122.

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tailed. He records that the "women appear to be more accustomed than the men to the use of this implement."

He gives also a most interesting observation on the use of a weighted pump drill among the Chukchis. The Chukchis also use flint and steel.*

The drilling set from Point Barrow (pl. LXXVI, fig. 32), will show the appearance of the parts of the fire-drill if we substitute the round stick for the flint drill. Some of the old drill stocks are pointed with finely chipped flint heads. The length of these points varies from 2 to 4 inches; the transverse section of one would be a parabola. They are in general more finely wrought than any of the prehistoric drills found in various localities all over the world. Prehistoric man was an adept in the art of drilling stone, bone, and shell; the stone tubes, some of them 18 inches long, bored very truly, are triumphs of the American Indians. Without doubt the prehistoric drill points were mounted like the Eskimo specimen, and were, perhaps, twirled between the hands, the almost universal method of using the fire-drill. Japanese carpenters drill holes in this way.

The winged mouth-piece is also a good example of workmanship. It is set with a mottled, homogeneous stone that is tolerably soft, which gives a minimum friction. This stone is much affected by the tribes over quite an extent of coast for labrets, etc. It is probably an article of trade as are flints. The bow is of walrus tusk, accurately made, but poorly engraved in comparison with the life-like art work of the southern Eskimo.

Another drilling set is from Sledge Island (pl. LXXVII, fig. 33). The Museum has no fire-making specimen from this locality. The drill stock is set with a point of jadeite lashed in with sinew cord. The bow is of walrus ivory; it is rounded on the belly and flat on the back. All Eskimo bows of ivory have a like curve, no doubt determined by the shape of the walrus tusk. In another, the most common form of the bow, its section is nearly an isosceles triangle, one angle coming in the center of the belly of the bow. The head is intended to be held in one or both hands; it agrees in form with the rude St. Lawrence Island heads.

Mr. E. W. Nelson collected at Unalakleet, in Norton Sound, a fire-drill, and the native names of the parts. The name of the set is *ŏŏ-jŏŏ-gŭ-tat;* the mouth-piece, *nă-ghŏŏ-tuk;* the drill, *ŏŏ-jŏŏ-ga-tuk;* the hearth of tinder-wood, *athl-uk;* the bow, *arshu-lŏw-shuk-pish-ik-sin-uk.*

This is a complete set (fig. 34) in first-rate order. The hearth has central holes along a deep median groove. Its bottom is flat, and it is rounded off on the sides and ends. All the parts are of pine wood, decorated in places with red paint. The drill is quite long, much longer than in any Eskimo set observed. It resembles more the Indian drill

* Nordenskiöld.—Voyage of the *Vega*. London, 1881. II, 120, 121.

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for rubbing between the hands. The bow is of wood, which also is quite the exception in other Eskimo regions, where it is of ivory. There are many bows of antler from Norton Sound in the Museum, some of them skillfully and truthfully engraved. The mouth-piece is plain; not very well made. It is set with a square block of marble. It has the usual hole in one of the wings for the passage of a thong.

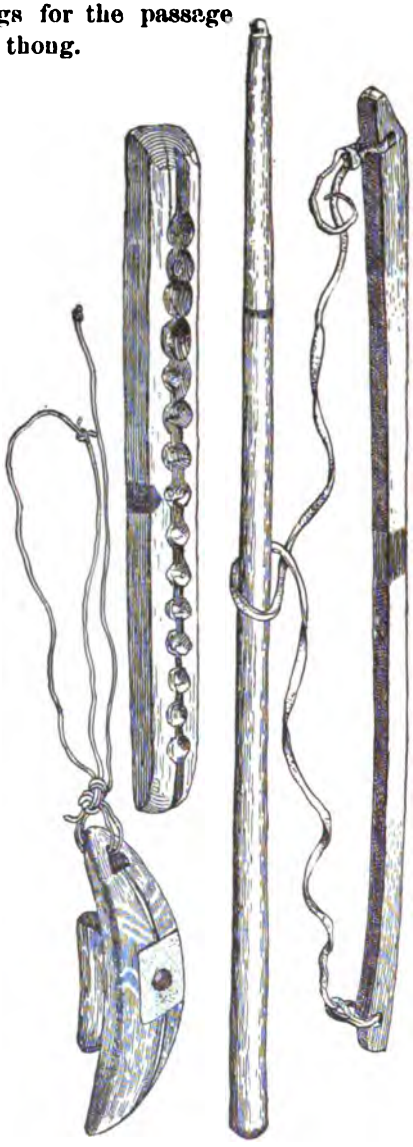

Fig. 34.
FIRE-MAKING SET (hearth showing median groove).
(Cat. No 33166, U. S. N. M. Eskimo of Norton Sound, Alaska. Collected by E. W. Nelson.)

Fig. 35.
LOWER PIECE OF FIRE-MAKING SET (hearth).
(Cat. No. 39901, U. S. N. M. Eskimo of Cape Vancouver, Alaska. Collected by E. W. Nelson.)

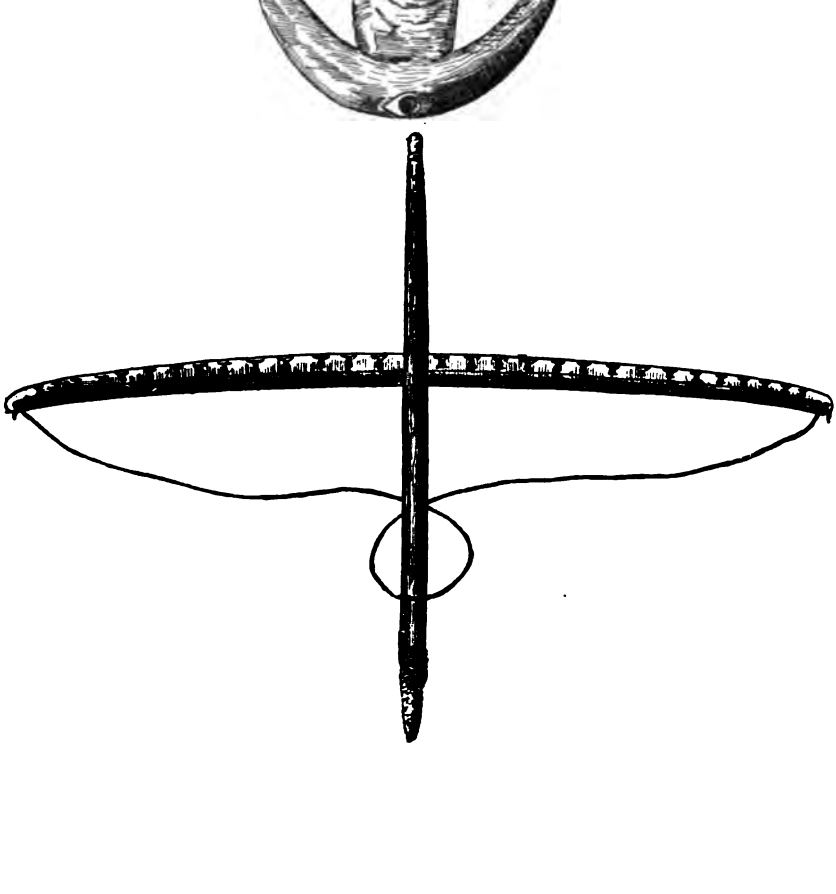

Fig. 32. BORING-SET. Cat. Nos. 89400, 89424, and 89630, U. S. N. M. Point Barrow, Alaska. Collected by Lieut. P. H. Ray, U. S. A.

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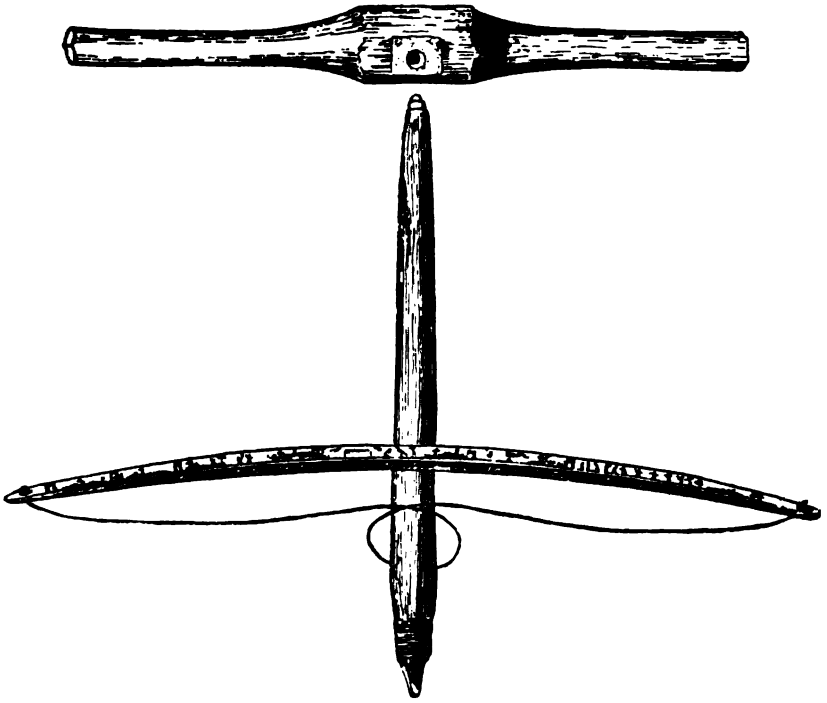

Fig. 33. DRILLING-SET. Cat. Nos. 25021, 44978, and 45106, U. S. N. M. Sledge Island, Alaska. Collected by E. W. Nelson.

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Cape Vancouver is represented by a fine old hearth. This object has evidently been prized by its owner; it has had two rows of fire-holes (fig. 35), one row bored on the step in front of the first holes made; some of the holes are bored clear through. The reason why this was valued is, because the wood is so tindery that it is easy to make fire upon it.

Chalitmute, in the Kuskokwim region, on the northern side of the bay of that name, opposite Nunivak Island, is the next locality southward to be considered. The parts of this set are exceptionally well-[illegible]ed. The hearth is (pl. LXXVIII, fig. 36) stepped. It has four holes [illegible]ared for use; on one, fire has been made. The drill is unusually [illegible]. The mouth-piece has no teeth-grip, and there is no evidence that it was ever held in the mouth. It is intended to be held in the hand. This mouth-piece is set with an oval socket-stone of black obsidian, ground down into facets and polished. The cord handles are fine, large teeth of the sea lion. The centers of the circles so characteristic of Eskimo art, are inlaid with wood. The holes for the drill cord are narrow; they must have been dug through with a sharp, narrow instrument. As before remarked, this is the region where the hand rest is more used than the mouth-piece, and the bow is not used at all.

The fire-making set from the Togiak River, was collected in 1886, by Sergt. I. Applegate, of the U. S. Signal Corps. Kassianamute, from which village it comes, is in the Bristol Bay region, but this set has a different appearance from the former outfits (pl. LXXIX., fig. 37). The hearth is a block of wood worked out at one end into a handle. It is remarkable in having central holes not connecting, and with no connecting grooves. In this it closely resembles the block from East Greenland (fig. 25). This hearth is of soft, tindery wood, and doubtless when the holes became too deep to allow the powder to mass around the edge, the upper part of hearth was scarped down. The mouth-piece is large, and is in the form of a seal. It has only a shallow, crescentic teeth-grip; from the size of the mouth-piece, its shape, and the absence of a block to fasten between the teeth, it must have been nearly always held in the hand of one of the operators. It is set with a round pebble, mottled with green. The cord is a thong of rawhide with handles of wood.

The next locality is Koggiung, on the southern shore of Bristol Bay, near its head. Two sets are shown from this locality. From the hearths it will be seen that both fire-slots on the side and center holes are used here. These sets are called *nŭ-tshŭn* (fig. 38). The apparatus shown in figure 38 has the stepped hearth. Both drill and hearth apparently have been made for sale. The mouth-piece is a good one, set with a large socket-piece of a black stone with green mottlings. This stone is tolerably soft. It is much used by the Bristol Bay Eskimo for making labrets, etc. The teeth-grip is very shallow. The hearth

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(fig. 39) is of a very peculiar shape; only one other has been noticed like it. The wood is of the best kind, and fire has been made on it a number of times. In several places the holes have been bored clear through

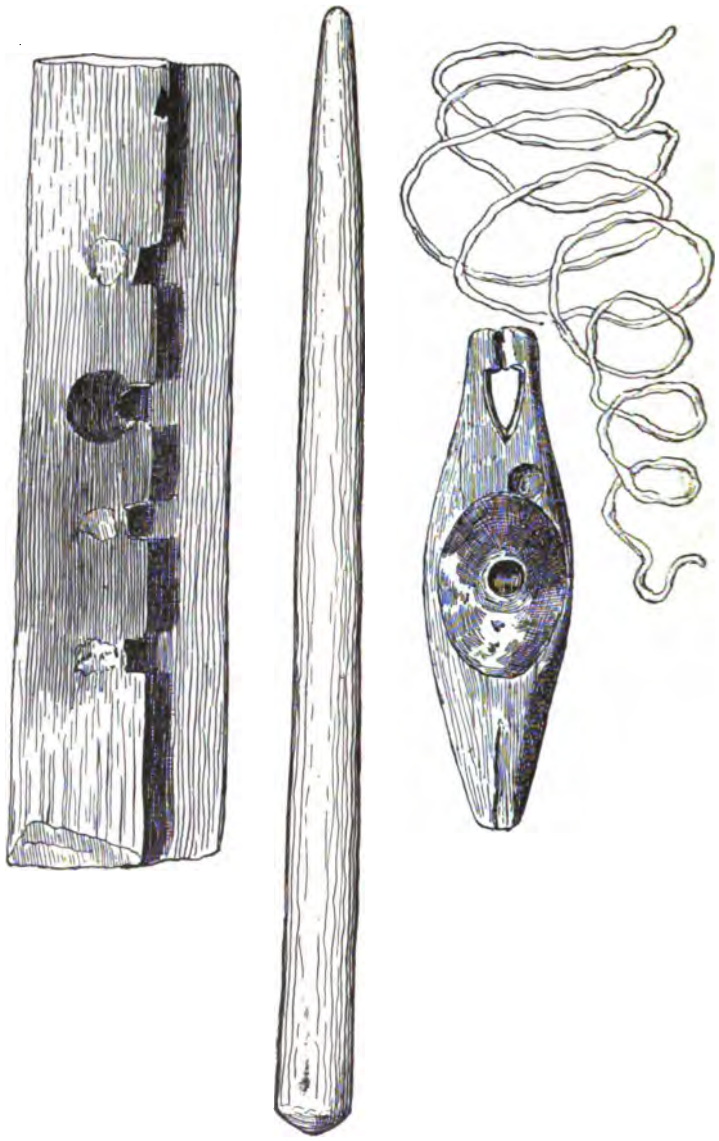

Fig. 38.

FIRE-MAKING SET (hearth with step and five slots).

(Cat. No. 127819a, U. S. N. M. Koggiung, Bristol Bay, Alaska. Collected by W. J Fisher.)

The mouth-piece bears no evidence that it has been held between the teeth. It is highly probable that fire was made on these outfits more often by two persons, one holding the mouth-piece, or rest, and fanning

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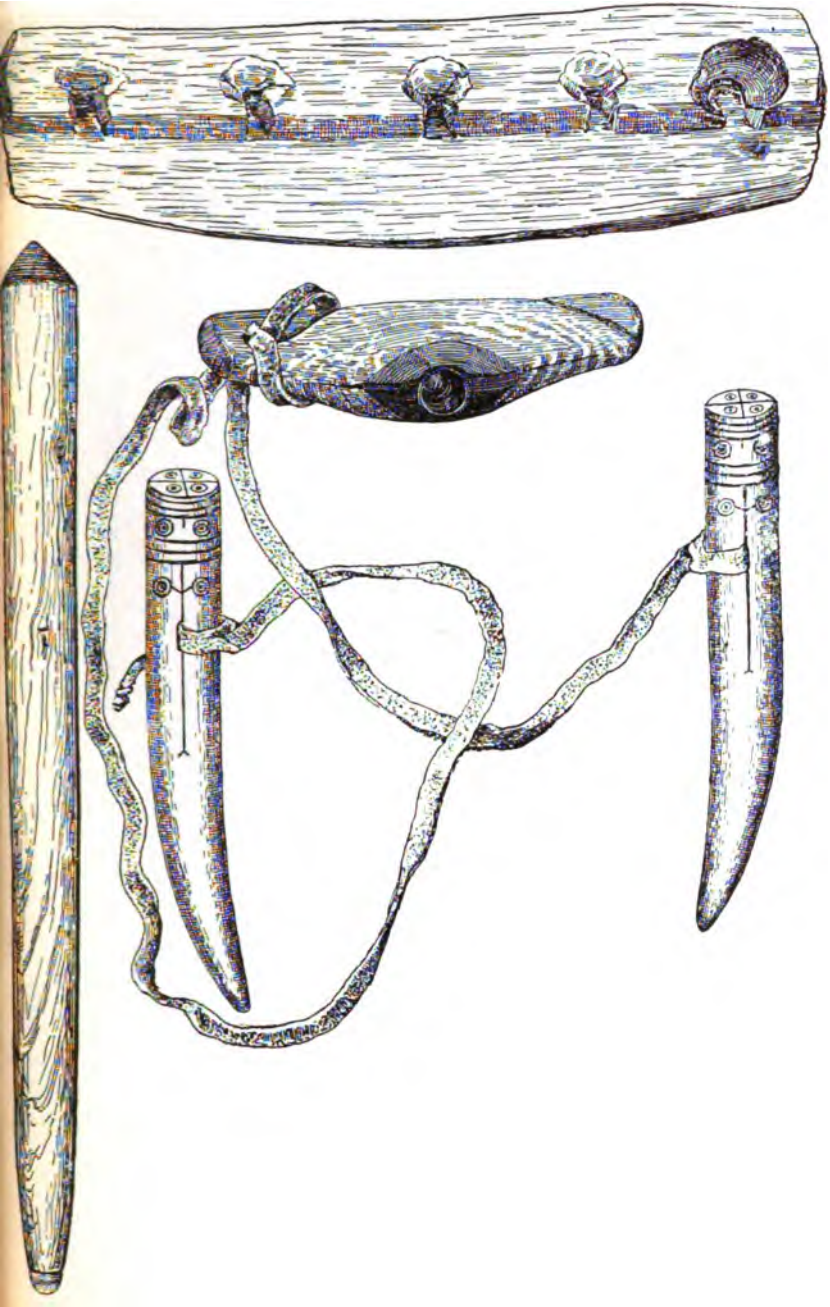

Fig. 36. FIRE-MAKING SET. Cat. Nos. 36325 and 37961, U. S. N. M. Eskimo of Chalitmute (Kuskokwim Region), Alaska. Collected by E. W. Nelson.

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the flame, the other pulling the cord. This must be the method in Bristol Bay. Neither the true mouth-piece nor any bow has been procured by the Museum from this interesting region, from whence there are copious collections of ethnological objects. The cords without handles are worthy of notice.

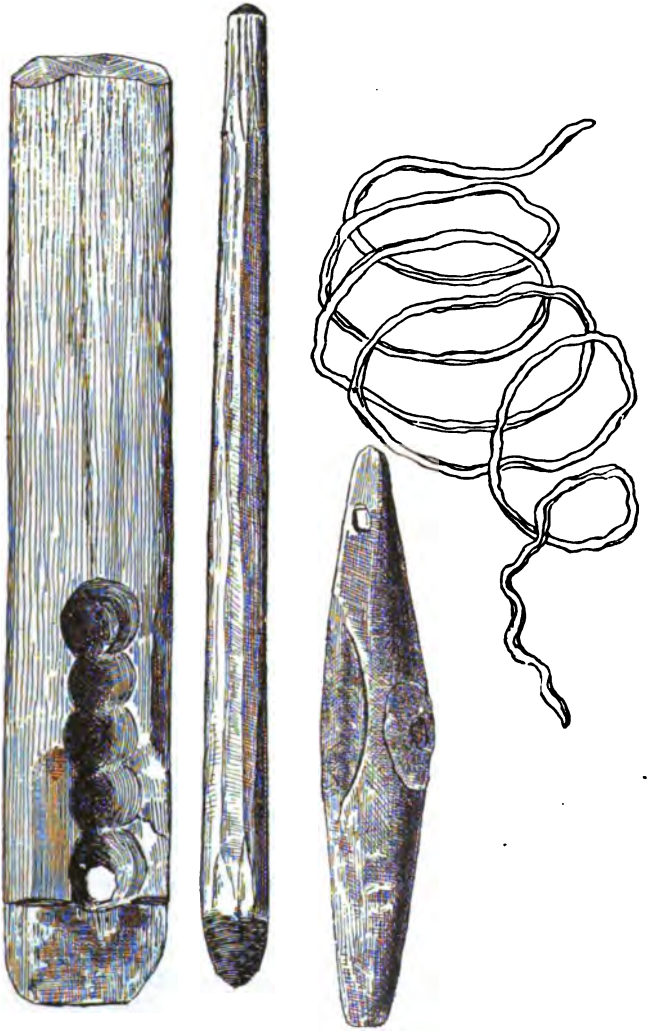

FIG. 39.

FIRE-MAKING SET (hearth with central holes and end step).

(Cat. No. 127819b, U. S. N. M. Koggiung, Bristol Bay, Alaska. Collected by W. J. Fisher.)

Another set from Bristol Bay is said by its collector, Charles McKay, to be used by both Eskimo and Indians. It is a very valuable outfit because of its completeness (pl. LXXX, fig. 40). The hearth is a rounded piece of wood with four large holes opening by slots onto the step. The

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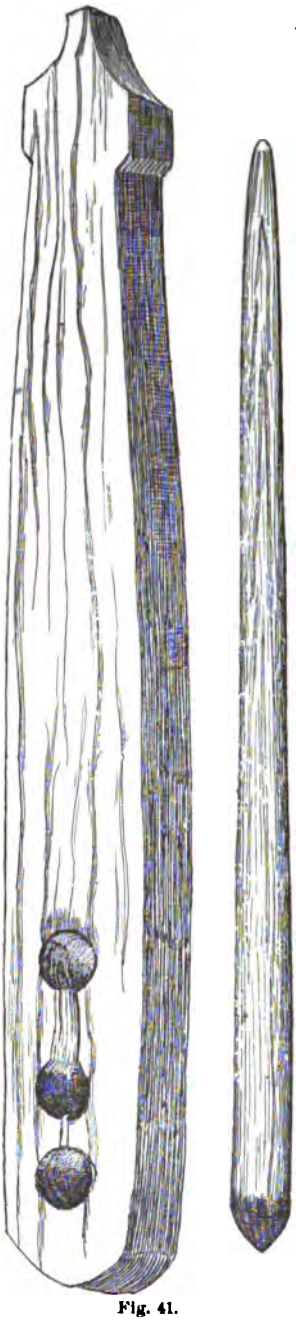

Fig. 41.
LOWER PIECE AND SPINDLE OF FIRE-MAKING SET.
(Cat. No. 72514, U. S. N. M. Eskimo of Kadiak Island, Alaska. Collected by W. J. Fisher.)

drill is a thick, tolerably hard piece of close-grained wood like the hearth. The mouth-piece has no regular block for the teeth-grip, but has a crescentic gash on each side instead. It is set with a socket of a rock resembling marble. Nearly all the mouth-pieces south of Norton Sound are in the shape of seals, or other long animals. Cord handles are used attached to a thick thong of buck-skin. Fungus is used for tinder and a blaze is started with cones of the larch. These are kept in the box, the lid of which is tied on with a thong.

Kadiak, the lowest limit of the western Eskimo, is as far south as the four part fire-drill extends by specimens in the Museum (fig. 41). The hearth is of cedar wood with three central holes with a connecting groove. It is neatly finished. The drill is also of cedar and bears the marks of the use of the thong; the top has also been used in the socket of a rest. The drill approaches in length those used for twirling between the hands by the Indians.

While the Aleutians use flint and steel, or a stone containing quartz and pyrites, struck against another stone, they still make use of the four-part drill at certain times. Hunting parties, says Mr. L. M. Turner, carry the drill to use when their matches run out. It takes two men to work it, one holding the hand rest and the other pulling the thong. The spindle is made of harder wood, so as to wear the light dust which ignites, from the hearth. A moment only is necessary to get fire; this is fed with tinder made of willow catkins and powdered charcoal. Sometimes, in order to get fire, they hold tinder at the mouth of a gun and ignite it by firing off a light charge of loose powder.

Possessed of four methods of getting fire, the Aleutian is superior to more fortunately situated people who depend wholly on matches.

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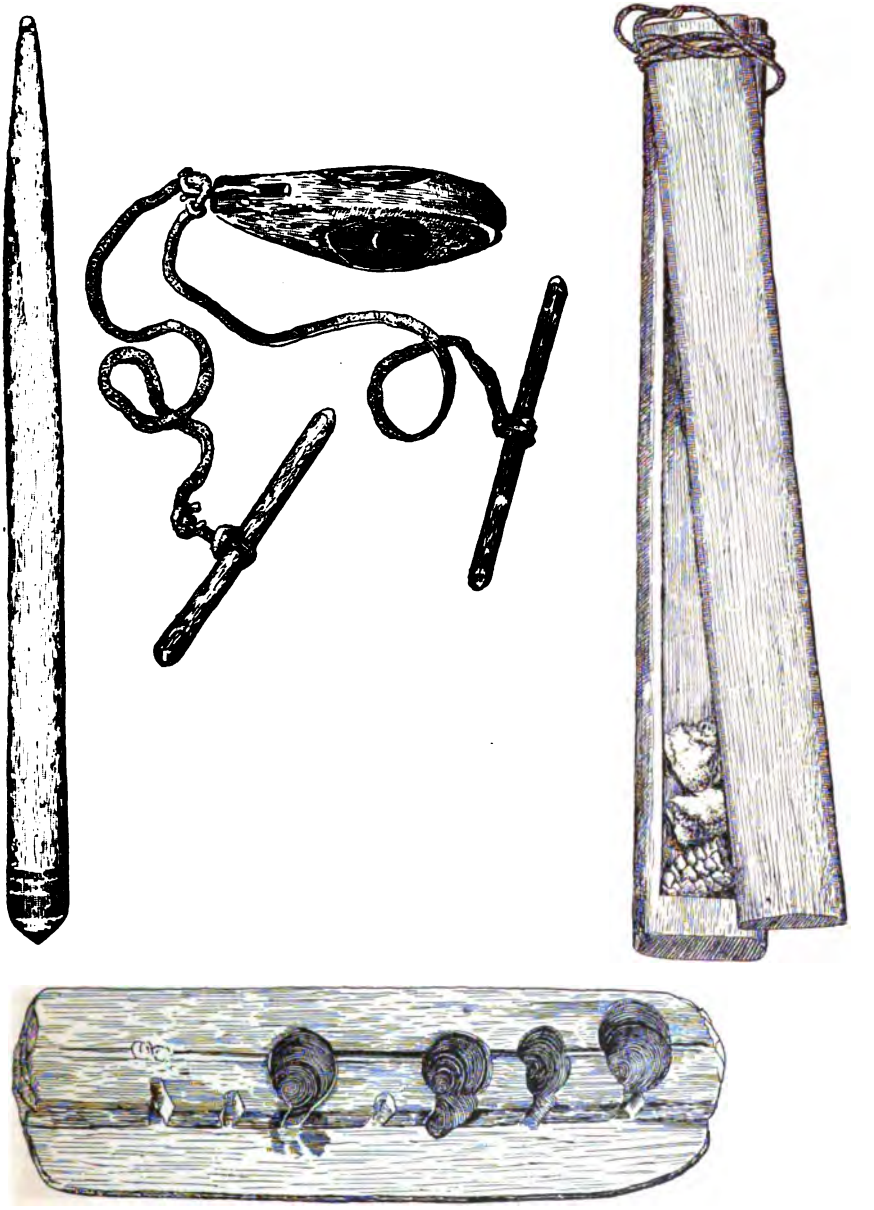

Fig. 40. FIRE-MAKING SET. Cat. No. 55938, U. S. N. M. Eskimo of Bristol Bay, Alaska. Collected by Charles McKay.

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II.—FIRE-MAKING BY SAWING.

Prof. Alfred Russel Wallace has noted the method by sawing in his work entitled "The Malay Archipelago," p. 332: Two pieces of bamboo are used; a sharp edge piece like a knife is rubbed across a convex piece in which a notch is cut, nearly severing the bamboo (fig. 42); after sawing across for awhile the bamboo is pierced, and the heated particles fall below and ignite. The Ternate Malays and the Tungaras of British North Borneo* have improved upon this by striking a piece of china with tinder held with it against the outside of a piece of bamboo, the siliceous coating of the latter yielding a spark like flint. Both of the methods mentioned are in use at different points in the area affected by Malay influence.

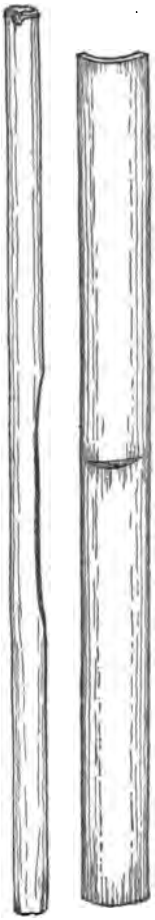

Fig. 42.
MALAY FIRE STICKS.
(Cat. No. 129775, U. S. N. M. Models in bamboo made by Mr. Hough after Prof. A. R. Wallace's description. The Malay Archipelago, p. 332.)

The Chittagong hill tribes, on the eastern frontier of British India, use sand on the sawing knife to increase the friction.†

The Karens of Burma, Dr. R. M. Luther informs the writer, hollow out a branch of the *Dipterocarpus* tree like the lower piece of bamboo spoken of, cut a transverse notch, and saw across in it with a rubber of iron-wood. The wood fibers ground off form the tinder; the coal is wrapped up in a dry leaf and swung around the head till it blazes. It takes only two or three minutes to get a blaze this way.

Bearing upon the origin of this method of sawing in these localities, nature is alleged to suggest the way and to repeat the process that would give to fireless man the hint. Mr. W. T. Hornaday relates that many fires are started in the jungle by bamboo rubbing together in a high wind-storm. The creaking is indescribable; the noise of the rasping and grinding of the horny stems is almost unendurable.

In many tribes it is found that often there is more than one method of fire making practiced. For instance, in Borneo, as we have seen, the Tungaras use the sawing method, the Saribus Dyaks the *besiapi*, or fire syringe, a most interesting fact,‡ other Dyaks the rotary drill,§ while the Rev. Dr. Taylor says that the Dyaks are acquainted with the use of the bow and string and the upright stick and cord (pump drill). In connection with all these methods probably flint and steel were used.

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* D. D. Daly.—Proc. Roy. Geog. Soc. 1888. p. 10.

† Capt. T. H. Lewis.—Hill tribes of Chittagong. Calcutta, 1869. p. 83.

‡ The American Anthropologist. Washington, 1888. I, No. 3, p. 294.

§ J. G. Wood.—The Natural History of Man. II, p. 502.

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So in Australia, while the rotary drill is the usual way, some tribes have acquired the art of producing fire with knife or rubber, that is, the sawing method presumably under foreign influence.*

III.—FIRE-MAKING BY PLOWING.

One of the most marked of fire-making methods in its distribution is that pursued by the Pacific Islanders, confined almost entirely to the Polynesian cultural area. It has spread to other islands, however, being met with among the Negritos of New Britain:

> *a* They rub a sharpened piece of hard stick against the inside of a piece of dried split bamboo. This has a natural dust that soon ignites. They use soft wood when no bamboo can be procured, but it takes longer to ignite. The flame is fed with grass.†

Fig. 43.
FIRE-MAKING STICKS (*a* SHOWING GROOVE).
(Cat. No. 130675, U. S. N. M. Samoa. Deposited by Harold M. Sewall.)

There is a close connection between the Malay sawing method and this, as there is a decided Malay preponderance in the make-up of the population of the Islands.

The fire-sticks shown (fig. 43) were procured by Mr. Harold M. Sewall, at Samoa, and deposited in the museum by him.

The wood is a light corky variety, probably of the *Hibiscus tiliacus*, which is used for this purpose at Tahiti, or perhaps it is of the paper mulberry. The rubber may be of some hard wood, although fire may be made by means of a rubber of the same kind of wood as that of the hearth, though no doubt it requires a longer time to make fire if this is done. In the Sandwich Islands, Mr. Franklin Hale Austin, secretary of the King, states that the rubber is of *koh* or *ohia*, that is, hard wood and the hearth of *hon*, or soft wood, and the friction is always in soft woods; this is true, I believe, everywhere this method is practiced, in spite of the fact that a soft rubber on hard wood will answer as well.

Lieut. William I. Moore, U. S. Navy, gave the writer a complete description of the manipulation of the Samoan fire-getting apparatus.

The blunt pointed stick is taken between the clasped hands, somewhat as one takes a pen, and projected forward from the body along the groove at the greatest frictional angle consistent with the forward motion which has been found to be from 40 to 45 degrees. Kneeling on the stick the man forces the rubber forward, slowly at first, with a range of perhaps

* R. Brough Smith.—The Aborigines of Victoria. London, 1878. I, p. 393.
† W. Powell.—Wanderings in a Wild Country. p. 206.

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6 inches, till the wood begins to be ground off and made to go into a little heap at the end of the groove; then he gradually accelerates the speed and moves with a shorter range until, when he pushes the stick with great velocity, the brown dust ignites. This is allowed to glow and if it is required to be transferred to dry leaves or chips of wood it is done by means of a tinder made of frayed or worn tapa cloth.

The groove (fig. 43*a*) is the most characteristic feature of this apparatus, there being apparently no definite form of implements for this purpose. Fire is made on any billet of dry wood that is available. It is not necessary to cut a slot, or even a groove, the hard wood rubber will form one, so that there is no more need of apparatus than among the Navajos, where two bits of yucca stalk collected near by form the fire tools.

That making fire by this way is difficult to those inexperienced in it is not strange. Mr. Darwin found it quite so, but at last succeeded. The Samoan gets fire in forty seconds, and so great is the friction and the wood so well adapted that Mr. Austin, before quoted, says it sometimes actually bursts into flame.

The Australians in some parts use a method very much like the one described. They rub a knife of wood along a groove made in another stick previously filled with tinder.*

IV.—PERCUSSION.

1. FLINT AND PYRITES.

Ac primum silici scintillam excudit Achates
Suscepitque ignum foliis atque arida circum
Nutrimenta dedit, rapuitque in fomite flammam.

(Æneid B. 1, 174–176.)

One of the oldest methods of fire-making that we know of is, that by the percussion of flint and pyrites. It is believed to have been the original discovery. If there is any difference in the difficulties of conception and execution in either of the inventions, it lies in favor of the sticks of wood.

The distribution of the flint and pyrites method, both in time and place, is very interesting. Mr. Evans, in his epoch-making work, "Ancient Stone Implements," page 14, remarks that the name of pyrites (πυρ, fire) is itself sufficient evidence of the purpose to which the mineral was applied in ancient times. Whatever the fact is in Roman history, the Eskimo calls pyrites firestone, some Indian tribes call flint firestone, the German name for flint is *feuerstein*, and it is a reasonable supposition that whatever people used flint or quartz, pyrites, or other forms of iron ore for making fire, would call the stone firestone. The statement of Pliny that fire was first struck out of flint by Pyrodé, the son of Cilix, Mr. Evans thinks, is a myth which points to the use of silex and pyrites, rather than to steel.

* R Brough Smith.—The Aborigines of Victoria. London, 1878. 1, p. 394.

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Mr. Thomas Wilson calls my attention to a discovery of a pyrites nodule by M. Gaillard, in a flint workshop on the island of Guiberon in Brittany. The piece bore traces of use. Mr. Wilson thinks that the curved flakes of flint like the one figured, found so numerously, were used with pyrites as strike-a-lights. The comparative rarity of pyrites is, perhaps, because it is easily decomposed and disintegrates in unfavorable situations in a short time, so that the absence of pyrites does not militate against the theory that it was used. A subcylindrical nodule of pyrites 2½ inches long and bruised at one end was found in the cave of Les Eyzies, in the valley of Vézère, Perigord, mentioned in Reliquae Aquitanicæ, page 248. This is supposed to have been a strike-a-light.

Prof. W. B. Dawkins thinks that—

In all probability the Cave-man obtained fire by the friction of one piece of hard wood upon another, as is now the custom among many savage tribes. Sometimes, however, as in the Trou de Chaleux, quoted by M. Dupont (Le Temps Prehistorique en Belgique, second edition, page 153), he may have obtained a light by the friction of a bit of flint against a piece of iron pyrites, as is usual with the Eskimos of the present day.*

Mr. Dawkins also says that fire was obtained in the Bronze Age by striking a flint flake against a piece of pyrites, sometimes found together in the tumuli. He figures a strike-a-light from Seven Barrows, Lambourne, Berks, England, an outline of which is reproduced here for comparison with the one from Fort Simpson, British Columbia (fig. 44*a* and *b*). Pyrites has been found in a kitchen-midden at Ventnor, in connection with Roman pottery† Chambers's Encyclopædia, article, Pyrites,‡ is authority for the statement that pyrites was used in kindling powder in the pans of muskets before the gun flint was introduced.

It is thus seen that this art has a high antiquity, and that on its ancient areas its use comes down nearly to the present day, the flint and steel being its modern or allied form.

In North America this art is distributed among the more northerly ranging Indian tribes, and the Eskimo of some parts. Its use was and is yet quite prevalent among the Indians of the Athapascan (formerly Tinné) stock of the north. By specimens in the Museum, and notes of explorers, it is found to range from north of Dixon's Sound to Labrador, the following localities being represented, viz: Stikine River, Sitka, Aleutian Islands, Kotzebue Sound, Point Barrow, the Mackenzie River district, at Fort Simpson, and probably Hershel Island, Pelly Bay, Melville Peninsula, Smith Sound, and Labrador. The Canadian and Algonquins strike two pieces of pyrites (*pierres de mine*) together over an eagle's thigh, dried with its down, and serving instead of tinder.‖ From

* Dawkins.—Early Man in Britain. London. p. 210.

† *Loc. cit.*, p. 258.

‡ J. Anthrop. Inst. Great Britain and Ireland. VII, p. 83.

‖ Lafitau.—Moeurs des Sauvages Ameriquains. p. 272. An earlier account is found in Le Jeune, Relation de 1634, p. 24. Quebec, 1858.

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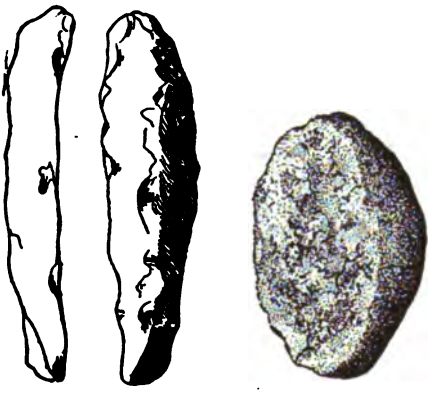
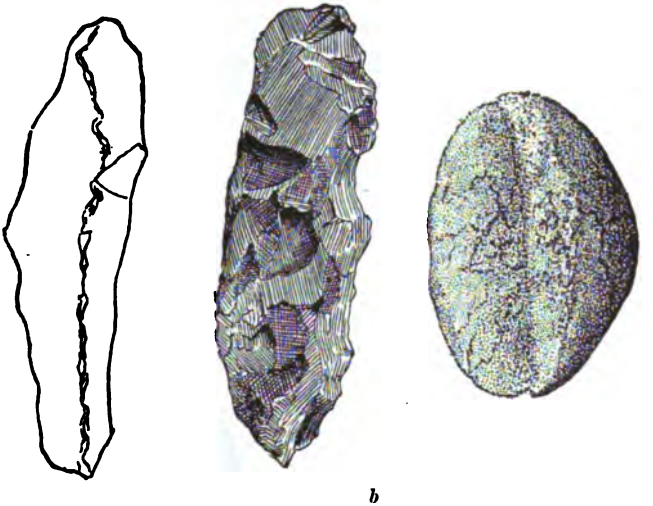
other sources we know that the extinct Beothucs, of Newfoundland, did the same.*

As far as can be ascertained, the Eskimo and Indians both use the method, so that it is not characteristic of either, as the four-part drill is of the Eskimo, as contrasted with the simple rotation sticks of the Indians. A description of a flint and pyrites outfit, as at present used, will give a general idea of the status of the invention. In different localities the manipulation differs somewhat, as will be noted farther on.



a



b

Fig. 44.

a STRIKE-A-LIGHT.

(Seven Barrows, Berks County, England. From Lubbock's Early Man in Britain, p. 258.)

b STRIKE-A-LIGHT.

(Cat. No. 1961, U. S. N. M. Indians of Fort Simpson, Mackenzie River district, B. C. Collected by B. R. Ross.)

The strike-a-light (No. 128405) was collected by Capt. E. P. Herendeen from natives who told him that it came from Cape Bathurst, hence

* J. Anthrop. Inst. Great Britain and Ireland. v, p. 225.

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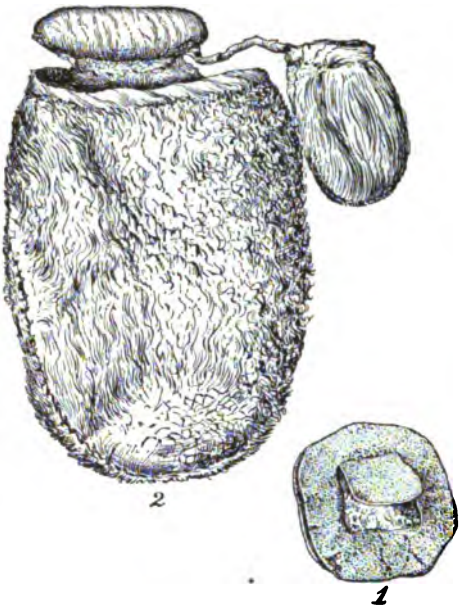

Fig. 45.—1. TINDER POCKET. 2. FIRE BAG.
(Part of Strike-a-light set).
(Cat. No. 128405, U. S. N. M. Mackenzie River District, B. C. Collected by E. P. Herendeen.)

he assigned the specimen to this locality on the evidence. Mr. John Murdoch has, with a great deal of probability, questioned this and thinks that it came from Herschel Island with the rest of Mr. Herendeen's collection and did not come from as far east as Cape Bathurst. While there is no improbability that this method is practiced at Cape Bathurst, yet the specimen has the appearance of the Mackenzie River strike-a-lights, hence it is deemed advisable to locate it in the Mackenzie River district at Herschel Island.

The essential parts of the apparatus are a piece of pyrites, a piece of flint and tinder. In the more northern parts of the Eskimo area, tinder is made from the down from the stems and catkins of various species of dwarf arctic willows. At present the natives often soak the tinder in a strong solution of gunpowder and water to make it quick; an older way was to mix powdered charcoal with it. This plan is like the charring of the linen rags used in the old-fashioned tinder boxes of forty years ago. The Eskimo then puts the tinder into a little round, flat pouch, with a flap in the middle (fig. 45, 1).

The pyrites (fig. 46, 3) looks like a short pestle, too much of which appearance the repeated scraping has no doubt given rise. The upper end is concave, while the lower end has the original smooth surface of the concretion. Pyrite is found at Point Barrow in spherical masses of various sizes up to several pounds in weight. These spheres are nearly always cracked in two and scraped on the plane

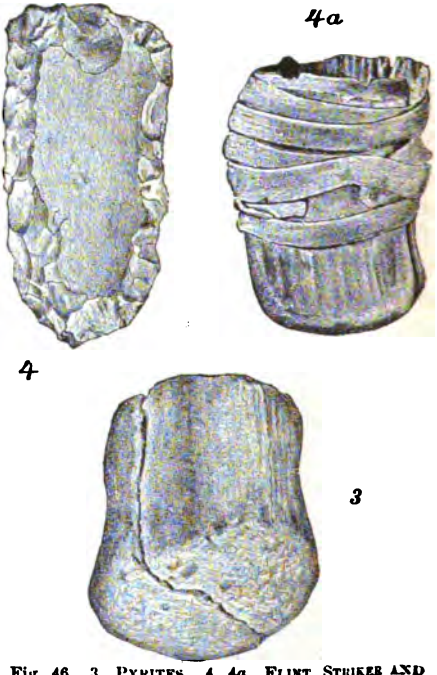

Fig. 46. 3. PYRITES. 4, 4a. FLINT STRIKER AND HANDLE.
(Part of Strike-a-light set.)
(Cat. No. 128405, U. S. N. M. Mackenzie River District, B. C. Collected by E. P. Herendeen.)

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surface for very obvious reasons. This gives the shape seen in Fort Simpson and Long Barrows specimen. Mr. Murdoch says that the Eskimo think that pyrites comes down from above in meteors. They call it "firestone." A native related that in old times they did not use flint, but two pieces of pyrites, and got "big fire."

The flint (fig. 46, 4) is an oblong piece of chert, square at the base and rounded at the forward end. It is more elaborately made than the flakes so numerous in Europe, one of which was found with the piece of pyrites in the English Barrows. The Mackenzie River scraper is more like the curved ancient one (fig. 44*b*). In most cases the flints used are not mounted in a handle; this specimen, however, is fixed in a handle made of two pieces of wood held together by a thong of sealskin (fig. 46, 4*a*).

The bag (fig. 45, 2) is made of reindeer skin. The little bag that hangs from the larger has a double use; it is a receptacle for reserve tinder, but its chief use is for a toggle; being passed under the belt it prevents the loss of the outfit, which is said to be carried by the women.

An oblong pad, stuffed with deer hair, is sewed to the mouth of the fire-bag to protect the hand from sparks and blows of the flint.

To get a spark, the Eskimo places (fig. 47) the piece of pyrites on the pad held in the left hand over the curved forefinger, the large end down and the thumb set in the cup shaped cavity in the top. The flap of the tinder pocket is turned back and held on the forefinger under the protecting pad. The flint is held in the right hand and by a scraping motion little pieces of pyrites at a dull red heat fall down into the tinder. The pellet that glows is transferred to the pipe or fire, and the flap of the tinder pocket is turned down, serving to keep the tinder dry and to extinguish it if necessary.*

Fig 47.
METHOD OF USING THE STRIKE-A-LIGHT.
(Cat. No. 128405, U. S. N. M. Drawing by W. H. Burger.)

There comes in here appropriately a note of B. R. Ross on the burial customs of the Kutchin Indians of the eastern Athapascan stock. He says:

They bury with the dead a flint fastened to a stick, a stone to strike it on (pyrites) to make fire, and a piece of the fungus that grows on the birch tree for tinder and some touch-wood also.† *

There is no mention of this process of fire-making by the older writers

* Extracted from an article by the author in Proceedings U. S. National Museum, XI, 1888, 181–4.

† Smithsonian Report. 1866. p. 326.

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on Greenland, Cranz and Egede, though they carefully note and describe the plan by wood-boring. Later explorers going higher north in western Greenland have found it. Dr. Emil Bessels, writing about the Itah Eskimo of Smith Sound, says:

The catkins of the arctic willow are used as tinder to catch the sparks which have been produced through the grinding of two pieces of stone.*

Dr. E. K. Kane gives a more complete account from nearly the same locality, the Arctic Highlands of northwest Greenland. He says that the Eskimo of Anoatok struck fire from two stones, one a plain piece of angular milky quartz, held in the right hand, the other apparently an oxide of iron [pyrites or iron ore?] They were struck together after the true tinder-box fashion, throwing a scanty supply of sparks on a tinder composed of the silky down of the willow catkins (*Salix lanata*) which he held on a lump of dried moss.†

Very much farther west on Melville Peninsula Parry gives a complete and interesting description of the primitive way. This account gives us a link between the western and eastern Eskimo. He writes:

For the purpose of obtaining fire, the Eskimo use two lumps of common pyrites, from which sparks are struck into a little leathern case (see fig. 25, pl. LXXIV) containing moss well dried and rubbed between the hands. If this tinder does not readily catch, a small quantity of the white floss of the seed of the ground willow is laid above the moss. As soon as a spark has caught it is gently blown till the fire has spread an inch around, when the pointed end of a piece of wick being applied, it soon bursts into a flame, the whole process having occupied perhaps two or three minutes.‡

The Museum was in possession of a specimen catalogued, "Moss-bag and lumps of pyrites used by Innuit for getting fire," collected by Capt. C. F. Hall at Pelly Bay, in latitude 69°, longitude 90°, several degrees west of Melville Peninsula.

The only other record of the process under consideration among the Eskimo is found in the Aleutian Islands. There is absolutely no evidence had by the writer that the Eskimo south of Kotzebue Sound (Western Eskimo) use the pyrites and flint for making fire. The latest information about the Aleutian Islanders is given in a manuscript of the careful explorer, Mr. Lucien M. Turner. His observation will serve to explain the description of striking a light by earlier travelers.

They use the four part drill but they also use pyrites. A stone containing quartz and pyrites is struck against another similar one, or a beach pebble, into a mass of sea bird down sprinkled with powdered sulphur. This ignites and is quickly caught on finely shredded blades of grass or beaten stalks of wild parsnips. This method prevails to this day on the islands west of Unalashka.

The people told Mr. Turner that this was the ancient way. There is a doubt in the writer's mind that Sauer's (Billing's Expedition, page 59), and Campbell's (Voyage, page 59,) observations, brought together by Bancroft,§ were accurate with regard to the stones used. All the

* Die amerikanische Nordpol-Expedition. Leipzig, 1879. p. 358.

† Kane.—Arctic Explorations. I, p. 379.

‡ Parry.—Second Voyage. London, 1824. p. 504.

§ Bancroft.—Native Races of the Pacific States. I, p. 91.

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other details are correct, but they say they took two pieces of quartz, rubbed them with sulphur, and struck them together. It is well known that pieces of quartz even when rubbed with sulphur will not strike a spark of sufficient heat to cause ignition. The pieces used must have been pyritiferous quartz as noticed by Mr. L. M. Turner.

To resume, the following facts arise out of the foregoing considerations of the flint and pyrites method:

(1) It is very ancient, inferring from the few reliable finds of pyrites and flint in juxtaposition.

(2) Its distribution is among high northern tribes, both Eskimo and Indian.

(3) As far as known, its range is limited to this area, only one other instance coming to our notice, that of the Fuegians.

2. FLINT AND STEEL.

The flint and pyrites method is the ancestor of the flint and steel. The latter method came in with the Iron Age. It is found in the early settlements of that period. A steel for striking fire was found in the pile dwellings of the Ueberlinger See.* The Archæological Department of the Museum has a specimen of a strike-a-light of the early age of iron in Scandinavia. It is a flat, oval quartz stone with a groove around the edge; it is thought to be for holding a strap by which it could be held up and struck along the flat surface with the steel. It is scored on these surfaces. The specimen in the Smithsonian is from the national museum at Stockholm. In Egypt it is believed to have been used for a long period, though there is no data at hand to support the conclusion.† In China it has been in use for many centuries. Chinese history, however, goes back to the use of sticks of wood. The *briquet* must have been carried nearly everywhere by early commerce from the ancient countries around the Mediterranean, as it was into new lands by later commerce.

Many persons remember the tinder-box that was taken from its warm nook beside the fire-place whenever a light was wanted; the matches tipped with sulphur used to start a blaze from the glowing tinder are also familiar to the older generation. The tinder-boxes in use in this country were just like those in England from time immemorial down to fifty years ago (fig. 48). Mr. Edward Lovett, of Croydon, England, who has studied this matter thoroughly, calls attention to the resemblance of the old English tinder-flints to the neolithic scrapers. These scrapers, picked up at Brandon, can scarcely be discriminated from those made at the present time at that place, and there is a suspicion that the present tinder-flint has come down directly from neo-

* Keller.—Swiss Lake Dwellings. Pl. XXVIII, fig. 29.

† Sir J. W. Dawson gives an interesting account of the strike-a-light flints used in Egypt in 1844, in Modern Science in Bible Lands, p. 30.

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lithic times. The old English steel, or "Flourish," (fig. 48) is the characteristic shape, and has been carried by English commerce into many places. A picture of a strike-a-light used by the Lenguas of Brazil, seen lately, shows the unmistakable old "flourish."

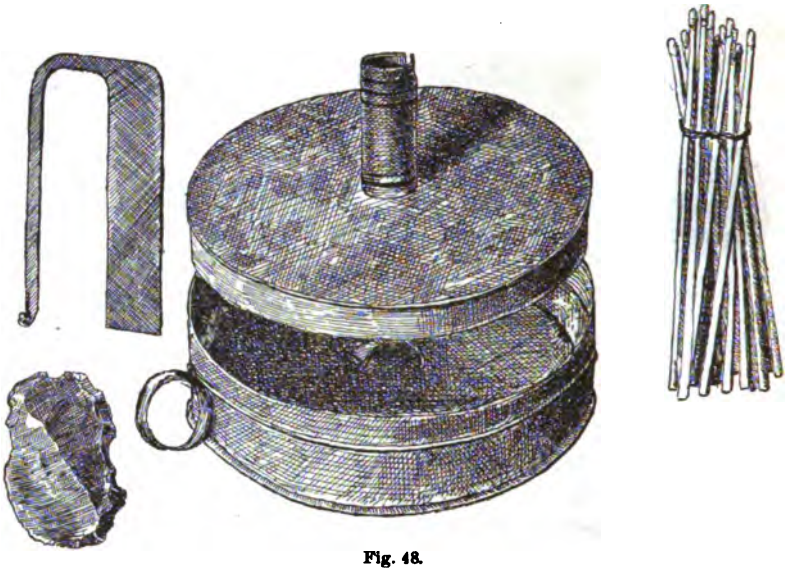

Fig. 48.
ENGLISH TINDER-BOX (with flint, "flourish," and bundle of spunks.
(Cat. No. 75516, U. S. N. M. England. Collected by Louis and Maurice Farmer.)

The tinder-boxes had also a damper to extinguish the tinder of burnt linen and to keep it dry. The lids were furnished often with a candle socket. This feature, says Mr. Lovett, has led to their preservation as candle-sticks long after they were superseded by matches.

Many devices were invented in order to improve on the crude way of holding the flint and steel in the hands to strike the spark into the tinder-box. One of these was the wheel tinder-box (fig. 49). The com-

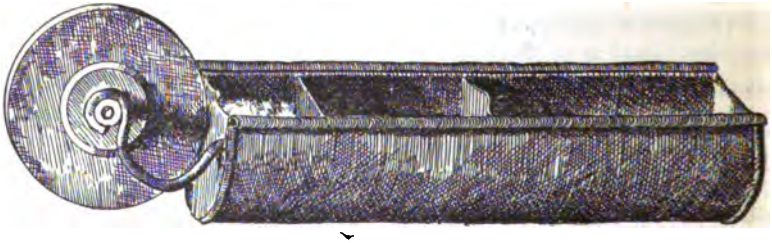

Fig 49.
WHEEL TINDER-BOX.
(Cat. No. 130431, U. S. N. M. Broadalbin, N. Y. Presented by F. S. Hawley.)

partment near the wheel held the tinder. The flint was placed in a socket on the sliding lid, and the wheel was turned by unwinding a string from off its axle with a sharp pull as in spinning a top. The

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flint was pressed against the rapidly revolving wheel and a shower of sparks fell into the tinder. The tinder pistol, whose name suggests its use, was another device.*

Other devices were intended to be carried in the pocket, and were probably brought out by the introduction of tobacco and the need of smokers for a convenient light.

The pocket strike-a-light is still used. The one shown (fig. 50) was bought in 1888 by Mr. E. Lovett, at Boulogne-sur-mer. They are still

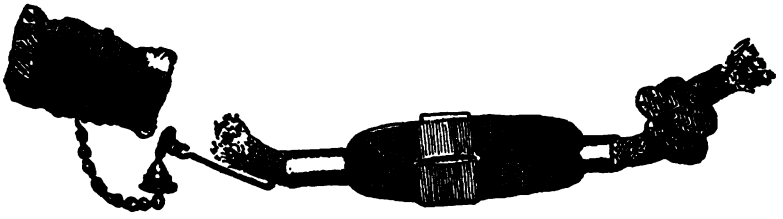

Fig. 50.
STRIKE-A-LIGHT (Briquet).
(Cat. No 129693, U. S. N. M. Boulogne-sur-mer. France. Collected by Edward Lovett.)

used by the peasants and work-people of France. An old specimen in the Museum of this character is from Lima. The roll of tinder, or "match," is made of the soft inner bark of a tree.

Among many of our North American tribes the flint and steel superseded the wooden drills as effectually as did the iron points the stone arrow-heads.

Some of these tribes were ripe for the introduction of many modern contrivances. Civilized methods of fire-lighting appealed to them at once. Among the Chukchis, Nordenskiöld says, matches had the honor of being the first of the inventions of the civilized races that have been recognized as superior to their own.† It was so among our Indian tribes; the Mandan chief "Four Bears" lighted his pipe by means of a flint and steel taken from his pouch when George Catlin visited him in 1832.‡

The Otoes (Siouan stock) made use of the flint and steel shown in fig. 51. The flint is a chipped piece of gray chert, probably an ancient implement picked up from the surface.

The steel is a very neatly made oval, resembling those of the Albanian strike-a-lights,§ or the Koordish pattern, (fig. 54). Here arises one of the perplexities of modern intercourse, perhaps both of these steels were derived from the same commercial center.

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* See figure in D. Bruce Peebles's address on Illumination, in Trans. Roy. Scottish Society of Arts, Edinburgh, XII., part I, p. 96.

† Nordenskiöld.—Voyage of the *Vega*. II, p. 122.

‡ The George Catlin Indian Gallery. Smithsonian Report. 1885. II, p. 456.

§ See figure in Jour. Anthrop. Inst. Great Britain, XVI, 1886, p. 67.

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The flint, steel, and tinder were always carried in a pouch, usually suspended from a belt as in specimen No. 8481 from the Assiniboins (Siouan stock) of Dakota. This is a buckskin waist-belt, beaded and fringed, ornamented with bells of tin. It supports a flapped pouch for the flint, etc. The tinder used was fungus.

Fig. 51.

FLINT AND STEEL.

(Cat. No. 22431, U. S. N. M. Otoe Indians, Kansas and Nebraska. Collected by J. W. Griest.)

The pouch of the Cheyennes (Algonquian stock) is compact, and neatly made of leather (fig. 52). The equipment is complete and of a superior order. The bone cup is used to hold the tinder while striking a spark into it. It is the tinder horn of early days, a cow's horn which was used to hold tinder before sheet-iron boxes came into use. The Lenguas of Brazil use a horn for the same purpose.* In the Aino set, (fig. 57), and the Eskimo strike-a-light, (fig. 45), can be seen this feature. The tinder with this set is rotten wood. Nearly all Indians know the value of fungus tinder.

The Comanche Indian strike-a-light is a similar pouch to the one described, but much poorer in equipment (fig. 53.) A broken rasp, a piece of chert, and a piece of spunk, is enough for the purpose, and a bag made from a saddle skirt to hold them, completes the outfit.

The flint and steel is still used nearly all over Mexico, Dr. Palmer informs me. There is at present a manufacture of gun and strike-a-light flints at Brandon, England, whence they are shipped to Spain,

*See figure in Jahrbuch Mittelschweiz. Commercial. Gesellsch, Arau, Zweiter Band, 1888, pp. 114–115.

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exico, Italy, and other civilized countries. Doubtless this flint from adalajara (fig. 54) came from Brandon. It is real calcareous flint, such does not exist in this country. The flint is the "swallow-tail" pattern. The tinder is of prepared fungus sold in little packets.

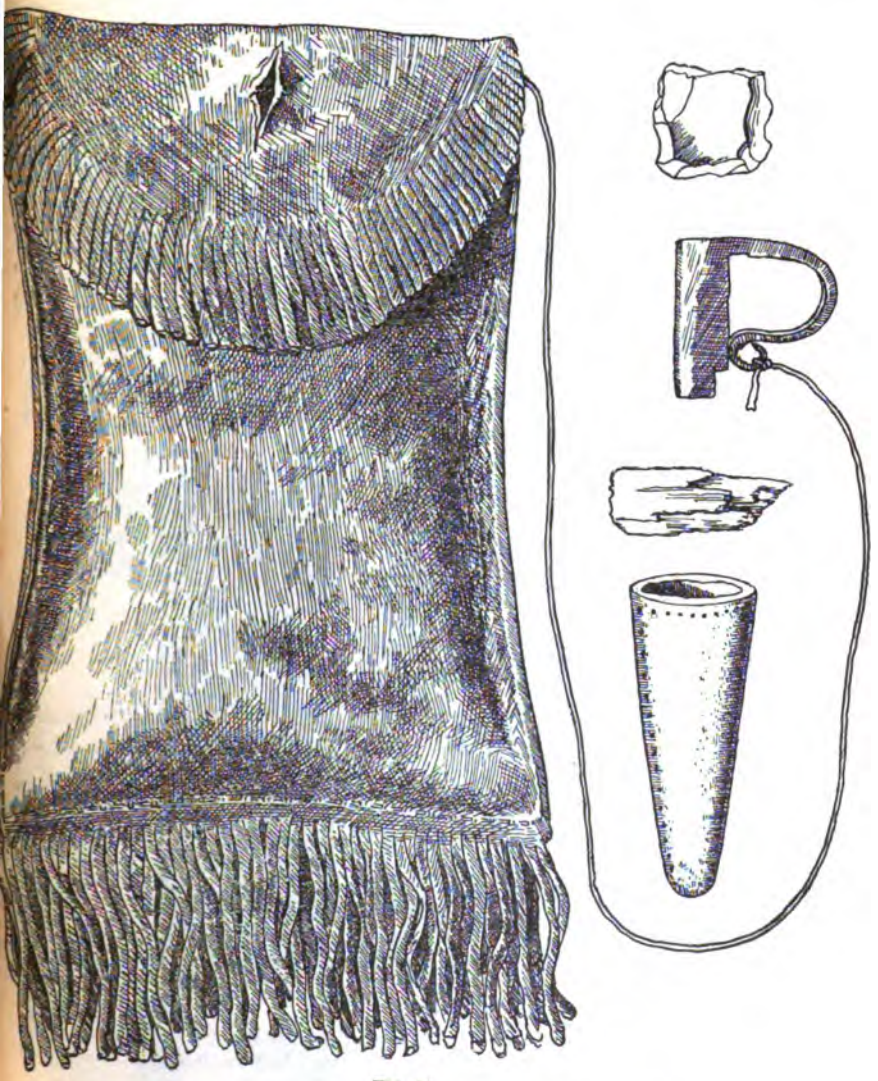

Fig. 52.
STRIKE-A-LIGHT (flint, steel, tinder-horn, spunk, and pouch).
(Cat. No. 22104, U. S. N. M. Cheyenne Indians, Arkansas. Collected by Dr. J. H. Barry.)

The Koords of Bhotan, Eastern Turkey, carry a pipe pouch containing besides flint, steel, and tinder, a pipe pick and a pair of pincers,

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to transfer the lighted tinder to the pipe (fig. 55). The tinder is prepared from a fungus, probably *polyporus* species. The steel, shaped like an old-fashioned bell pull, is a very good form for holding in the hand.

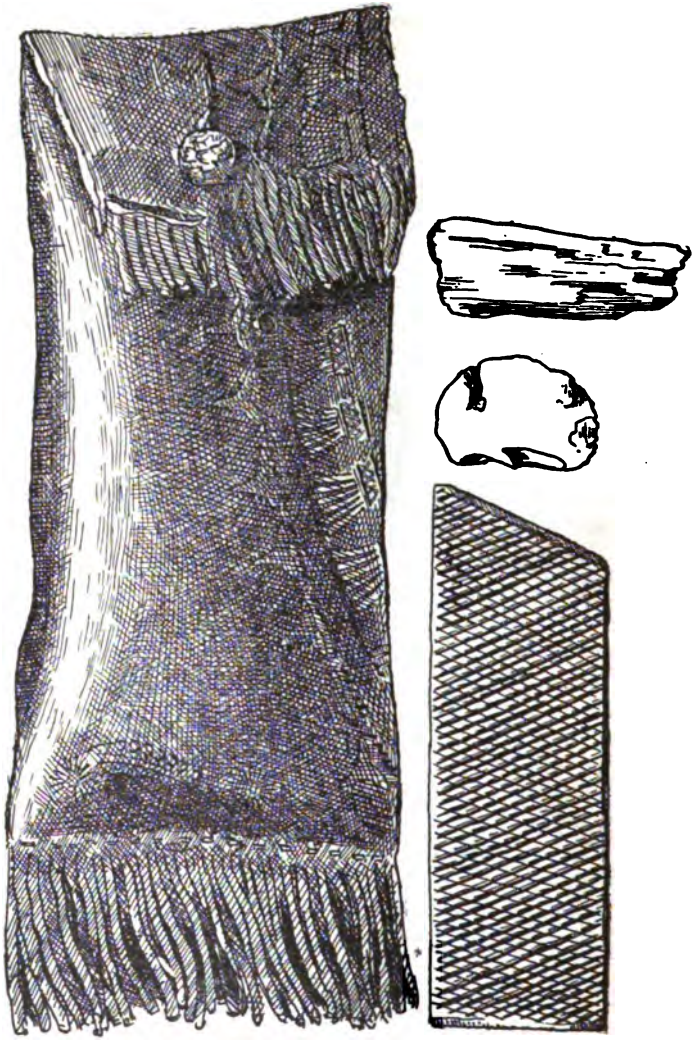

Fig. 53.
STRIKE-A-LIGHT. (Pouch for holding flint and steel.)
(Cat. No. 6972, U. S. N. M. Comanche Indians, Texas. Collected by Edward Palmer.)

The Chinese strike-a-light is the customary appendage to the pipe pouch. It is a very ingenious way of combining the steel with a pouch in which to keep the flint and tinder (fig. 56). In Thibet they are made very large and are finely decorated. One owned by Mr. W. W. Rockhill has a curving steel between 5 and 6 inches long, finely carved. The pouch was trimmed with encrusted silver set with jewels.

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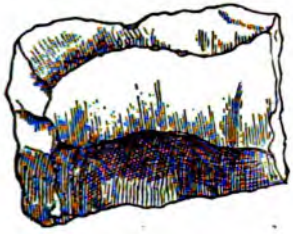
The Ainos of Japan use flint and steel for striking-a-light, this method having supplanted the generation of fire by sticks (p. 551.) This outfit shown (fig. 57, pl. LXXXI) is complete. The shoe-shaped steel is attached by a piece of sinew to the cork of a small wooden bottle containing the soft charcoal used as tinder. The flint is a small piece of ferruginous silex. With this set is a piece of stick which retains fire for a long time. It is the root of the *Ulmus campestris*, or *lævis*, formerly used for the fire-drill (see fig. 17), but has come into a secondary place since the introduction of the flint and steel.



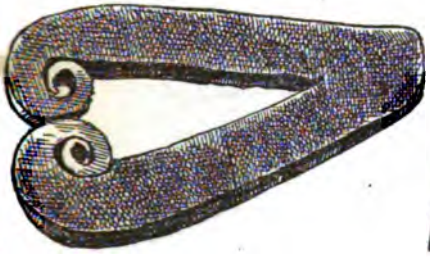


Fig. 54.

FLINT AND STEEL.

(Cat. No 126576, U. S. N. M. Guadalajara Indians, Mexico. Collected by Edward Palmer.)

Fig. 56.

STRIKE-A-LIGHT.

(Cat. No. 130311, U. S. N. M. China. Gift of George G. Fryer.)

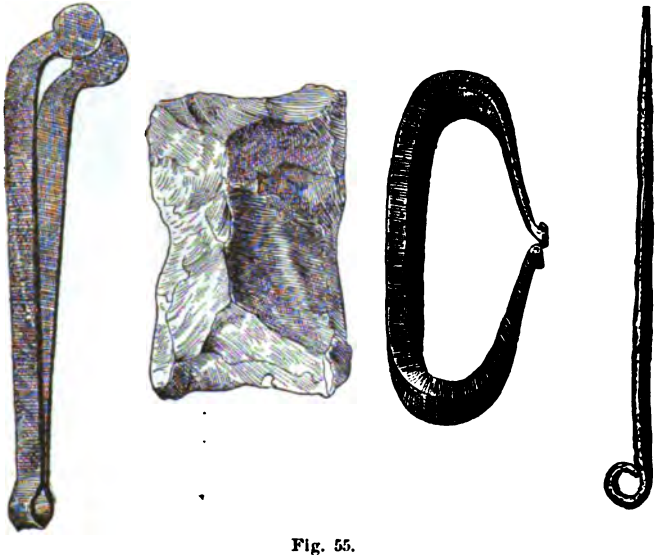


Fig. 55.

SMOKERS' PIPE-LIGHTING OUTFIT (showing flint, steel, pipe-pick, and pincers).

(Cat. No. 130407, U S. N. M. Koords of Bhotan, eastern Turkey. Collected by Rev. A. N. Andrus.)

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To strike a light the Aino takes out the cork with the steel attached and stirs up the tinder with the sharp point. He then holds up the

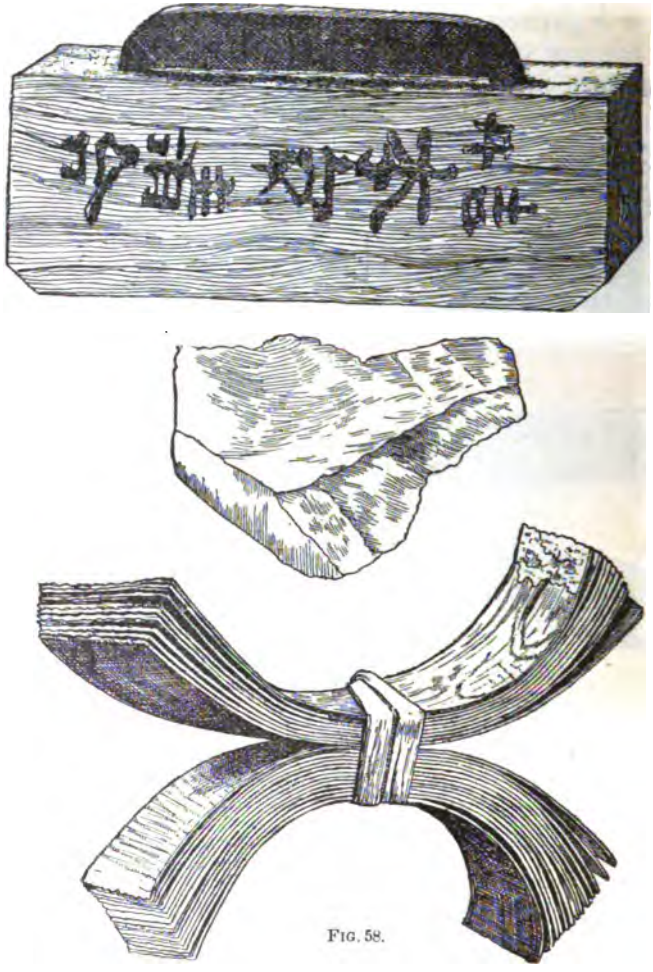

FIG. 58.

Fig. 58

TINDER-BOX (showing mounted steel, flint, and bundle of shaving matches; box one-third natural size).

(Cat. No. 127137, U. S. N. M. Japan. Gift of the Japanese Department of Education, Tokio.)

flint in his hand over the box and strikes a spark down into it. He then transfers the coal to his pipe, or material for fire, or fire-stick, with

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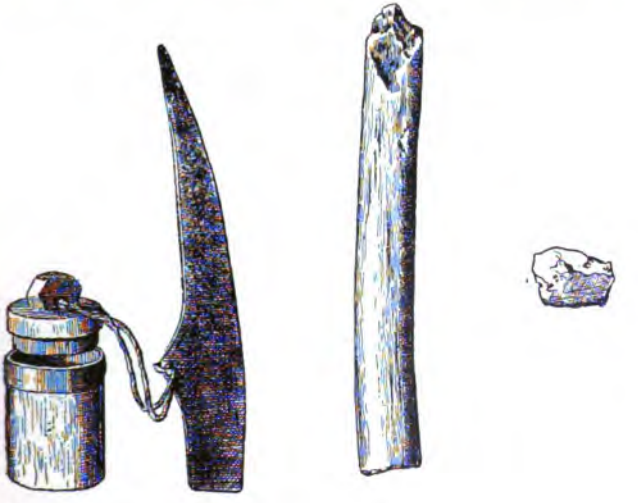

. 57. STRIKE-A-LIGHT. Flint, steel, tinder-box, and rush-pouch. Cat. No. 22257, U. S. N. M. Ainos of Yezo, Japan. Collected by B. S. Lyman.

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the point of the steel. These articles are kept in a rush pouch of twined weaving. A much ruder pouch of fishskin is in the Museum.

The Japanese tinder-box has two compartments, one with a damper for the tinder, and the other larger one for the flint and steel. This box is a familiar object in Japanese kitchens yet. The mounting of the steel in wood is an improvement on holding it between the fingers (fig. 58 and 59). No one it seems ever thought of so mounting the steel in Western countries. The matches are broad shavings tipped at both ends with sulphur, and are the Japanese rendering of the "spunks" used with our tinder-box.

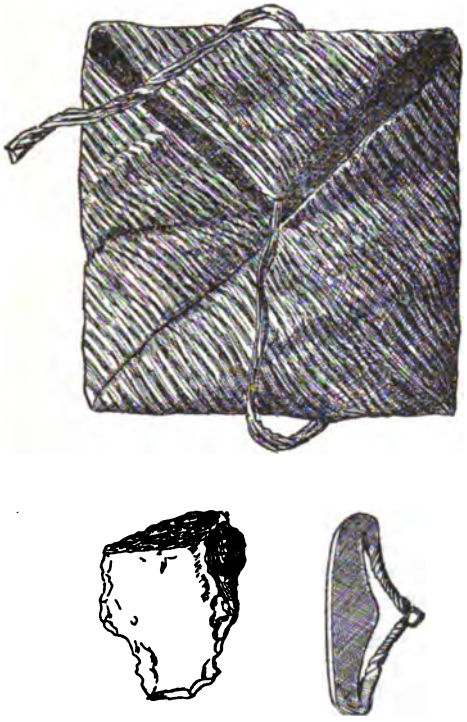

Fig. 60.

SMOKERS' STRIKE-A-LIGHT.

(Cat. No. 128136, U. S. N. M. Tokio, Japan. Gift of the Japanese Department of Education.)

Smokers in Japan carry a very small strike-a-light (fig. 60). The cloth pouch with a long flap that can be rolled around several times and tied, contains the three essentials, flint, steel, and tinder, the latter of burnt cotton.

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List of specimens described and figured.

	Catalogue No.	Name.	Localities and Tribes.	Collector.
Text fig. 1	74379	Fire-making set	Sitkana, Alaska	John J. McLean.
2	20644	....do	Bella Bellas, British Columbia.	James G. Swan.
3	127866	....do	Quinaielts, Washington	Charles Willoughby.
4	24096	....do	Klamaths, Oregon	L. S. Dyar
5	77193	....do	Hupas, California	Lieut. P. H. Ray, U. S. Army.
6	19640	Hearth	Washoes, Nevada	Stephen Powers.
7	17230	Fire-making set	Pai-Utes, Southern Utah	Maj. J. W. Powell.
8	11976	....do	....do	Do.
9	22022	....do	Wind River Shoshones	Do.
10	128094	....do	Mokis, Arizona	Mrs. Tilly E. Stevenson.
11	127708	....do	Zuñi, New Mexico	Col. James Stevenson.
12	69850	Slow match, punk	....do	Do.
13	25268	Hearth from cave	Silver City, New Mexico	Henry Metcalf.
14	130672	Hearth	Apaches, Arizona	Capt. Jno. G. Bourke, U. S. Army.
15	9555	Fire-making set	Navajos, New Mexico	Dr. E. Palmer.
16	15396	....do	Costa Rica	W. M. Gabb.
17	129970	....do	Ainos, Japan	Peabody Museum, D. P. Penhallow.
18	(*)	Sacred fire-drill	Idzumo, Japan	R. Hitchcock.
19	129971	Fire-making set	Somalis, East Africa	Peabody Museum, Dr. Chas. Pickering.
20	.....	Taveita men making fire.	.....	
Pl. LXXIV	10258			
21	9833			
22	10295	Fire tools	Frobisher Bay and Cumberland Gulf.	L. Kumlein.
23	14252			Capt. C. F. Hall.
24	34114	Boring set	....do	L. Kumlein.
Text fig. 25	.....	Fire drill	East Greenland	From Holm and Garde.
Text fig. 26	.....	Boring set	....do	Do.
Pl. LXXV	10128	Fire Bag	Holsteinberg, West Greenland.	Capt. C. F. Hall.
27				
Text fig. 28	1978	Hearth with cement	Mackenzie River	B. R. Ross.
Text fig. 29	1963	Hearth	....do	Do.
Text fig. 30	1327	Fire drill	Anderson River	C. P. Gaudet.
Text fig. 31	89822	Fire-making set	Point Barrow, Alaska	Lieut. P. H. Ray, U. S. Army.
Pl. LXXVI	89500	Boring set	....do	Do.
32	89630			
	89124			
Pl. LXXVII	25021			
33	44978	....do	Sledge Island, Alaska	E. W. Nelson.
	45108			
Text fig. 34	33166	Fire-making set	Norton Sound, Alaska	Do.
Text fig. 35	38601	Hearth	Cape Vancouver, Alaska	Do.
Pl. LXXVIII	37961	Fire-making set	Chalitmute, Alaska	Do.
36	36325			
Pl. LXXIX	127520	....do	Kassianamute, Alaska	I. Applegate.
37				
Text fig. 38	127819a	....do	Koggiung, Bristol Bay, Alaska.	W. J. Fisher.
Text fig. 39	127819b	....do	....do	Do.

* From photograph.

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List of specimens described and figured—Continued.

	Catalogue No.	Name.	Localities and Tribes.	Collector.
Pl. LXXX, 40	55938	Fire-making set	Bristol Bay, Alaska	Charles L. McKay.
Text fig. 41	72514	Hearth and drill	Kadiak Island, Alaska	W. J. Fisher.
Text fig. 42	129775	Fire sticks (model)	Malays	After Wallace.
Text fig. 43	130675	do	Samoa	Harold M. Sewall.
Text fig. 44	1861	Strike-a-light	Fort Simpson, British Columbia.	B. R. Ross.
Text fig. 45				
Text fig. 46	128405	do	Mackenzie River District.	E. P. Herendeen.
Text fig. 47				
Text fig. 48	75516	Tinder-box	England	L. and M. Farmer.
Text fig. 49	130431	Wheel tinder-box	Broadalbin, New York	F. S. Hawley.
Text fig. 50	129693	Strike-a-light	Boulogne-sur-mer, France	Edward Lovett.
Text fig. 51	72431	Flint and steel	Otoes, Kansas	J. W. Griest.
	8481	Belt with flint, steel, etc.	Assiniboines, Dakota	Dr. J. P. Kimball.
Text fig. 52	22104	Strike-a-light	Cheyennes, Arkansas	Dr. W. H. Barry.
Text fig. 53	6972	do	Comanches, Texas	Dr. E. Palmer.
Text fig. 54	126576	Flint and steel	Guadalajara Indians, Mexico.	Do.
Text fig. 55	130607	Pipe-lighting outfit	Koords, East Turkey	Rev. A. N. Andrus.
Text fig. 56	130311	Strike-a-light	China	George G. Fryer.
Pl. LXXXI, 57	22257	do	Ainos, Japan	B. S. Lyman.
Text fig. 58	128137	Tinder-box	Japan	Japanese Department of Education.
Text fig. 59				
Text fig. 60	128138	Strike-a-light	do	Do.

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KOREAN HEADDRESSES IN THE NATIONAL MUSEUM

By FOSTER H. JENINGS[1]

Among the many customs peculiar to quaint Korea, the style and manner of wearing the hat is probably the most noticeable. Fashions there seem never to change, for many styles of hats of to-day are of the same material and shape as those of the days of the Ming dynasty, or of the days of Confucius. The people have hats for all ranks and for all occasions—there are hats for the nobility, for the gentry, for petty officers, for chair bearers, and for almost every ceremony—and perhaps no nation has more ceremonies than the Koreans. There are also hats worn when a person reaches manhood, others for use during ancestral worship, for passing the civil service examination, during betrothal, at marriage, while mourning, and for making official visits to high dignitaries. The hat is in fact a badge of honor and its absence a sign of disgrace.

For many years butchers were not allowed to wear hats, the Buddhist religion making it a sin to take the life of any living creature. In 1895, however, a petition was presented to the Home Department of the Korean government asking that public notice be given throughout the eight provinces that butchers be allowed to wear hats the same as other citizens and that they be free from molestation. The preamble of the petition stated the grievances of the butchers: how for five hundred years, although guilty of no crime against their country, they had been grievously oppressed. The government promptly granted the petition. Upon being notified that their request had been allowed, a butcher named Pak, who had prepared the petition, wrote to the country butchers informing them of their approaching deliverance and warning them against

[1] The author of this paper was a young man of great talent and promise. He was a skilful artist, and when a mere boy often visited the National Museum for the purpose of sketching and study. Through his deep interest in Oriental, and especially in Korean, subjects, he became acquainted with the attachés of the Korean legation, who, impressed by his usefulness, caused him to be made an official of the fifth grade, in which capacity he was employed at the time of his death, January 15, 1900.—W. H.

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becoming puffed up by their sudden elevation in rank. A month later placards announcing that the petition was granted were posted throughout the country. The butchers in Seoul had for some months been allowed to wear hats; but if a country butcher wore one, he was greeted by some such remark as "You dog of a butcher, what are you doing wearing a hat like one of us?" Butchers are considered lower than beggars, as it is said "something might be made out of a beggar, but it is impossible for a butcher ever to rise."

When a boy attains the age of seven years he starts a topknot, which when grown is never changed in form as long as he lives. The topknot was the cause of an amusing episode in Seoul in

FIG. 3.—Headband and topknot. (No. 77,112, U. S. N. M.)

1895. Like many other nations when first adopting European customs, the Koreans went to extremes. An edict was issued that all topknots should be cut off, and, as the people naturally objected, soldiers were sent out in the city to forcibly cut off all topknots that had not been removed in compliance with the edict. This created such consternation that farmers would not bring their produce to the city markets, and such suffering resulted from want of food that the edict was abrogated and topknots were once more in full favor.

Every Korean, at all times, day and night, wears a band around the head (fig. 3). The hats are perched on top, never low on the head, and are secured by pins (fig. 4) to the topknot and by strings tied under the chin. Among the nobility, circular or ring-shaped

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insignia of rank, about half an inch in diameter, are worn back of each ear and fastened to the head by a string (fig. 5). Five grades of nobility are thus represented: (*a*) *Tā-kum,* first rank, smooth white jade; (*b*) second rank, smooth gold; (*c*) *Young-kum,* third rank, carved gold; (*d*) fourth rank, carved white jade; (*e*) *Na-ri,* fifth rank, tortoise shell (anciently of silver). The button of the royal family is of smooth green jade.

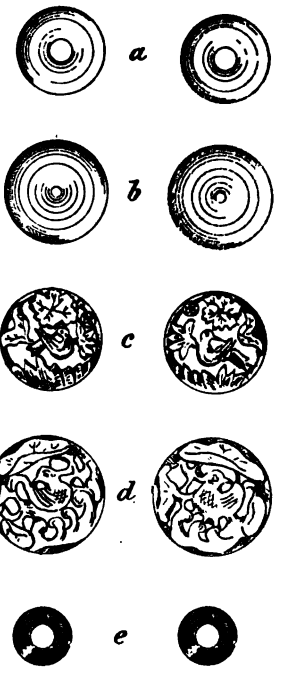

FIG. 5.—Buttons for headband denoting rank of nobility. (About ⅔ nat. size.)

The national hat of Korea (*kat*) is made of fine silk over a bamboo framework, stiffened with size (fig. 6). It has a small, cylindrical, truncated crown and a broad brim with long tying strings. The diameter of the brim is 18 inches and the height of crown 4½ inches. In ancient times the brim was, by royal edict, very much wider to prevent conspirators from whispering to each other, the stiff brims keeping them some distance apart. This illustrates a national characteristic of Koreans, their suspicion of every one, and it will be many years before this universal peculiarity is eradicated in this otherwise kind, genial people. The *kon* is a wide, circular band of black horsehair, 7½ inches high, worn by those of the literary class who have not yet passed a civil service examination or held office (fig. 7). It may also be worn by one who passes the second grade of merit at the literary or military examinations before holding office, but the lower class of merchants and laborers, unless after such examination, cannot wear it.

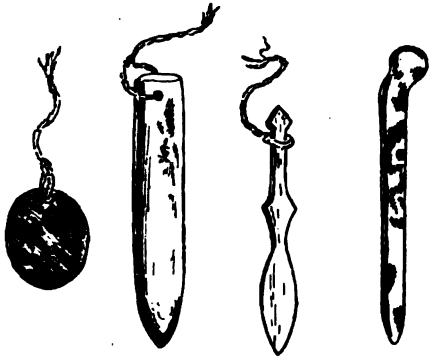

FIG. 4.—Hatpins for topknot. (⅔ nat. size.)

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FIG. 6.—National hat. (No. 77,060.)

FIG. 7.—House hat. (No. 77,056.)

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In the Korean civil service examination, one of the requisites is the examination cap, or *yu kon,* composed of a piece of coarse black cotton stuff, shaped like a grocer's paper bag, 9 inches high and 7 inches in diameter. It is worn by students only at the literary examinations, held yearly for the preliminary grade (fig 8). This hat is reputed to be made in the shape of the mountain near which Confucius was born, and was introduced from China several centuries ago, probably during the Ming dynasty.

FIG. 8.—Civil service examination hat. (No. 77,057.)

The court or official hat, *samo,* is 7 inches high with a high terraced crown of stiff lacquered paper and woven bamboo, covered with black sateen (fig. 9). It fits tightly over the forehead, and at the back on either side there are curved, ear-shaped wings of gauze that project horizontally forward. This is practically the coronet of Korea and can be worn only by the nobility on official occasions, but officers of the government wear such hats during an audience with the King. The wings are said to have been made to resemble ears bent forward in the act of listening to catch every word of command the King may utter. The royal hat or crown

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of the King of Korea is of the same shape as the *samo,* except that the wings are vertical instead of horizontal, indicating that the king receives his commands only from Heaven. The Koreans are great lovers of Chinese classics, and like all peoples of the far east, attach poetical names to everything. The gauze wings on the official hat are called the "wings of the locust." The Chinese poet says, "like the locust singing in the tree with love and peace toward all men," and as the locust is the emblem of peace, the royalty and men of noble rank, who are supposed to spend their time seeking peace and the welfare of their country, wear the locust-wing emblems on their headdress.

FIG. 9.—Official hat. (No. 202,889.)

Perhaps the most elaborate of Korean hats is the one worn by the king's assistants when he offers sacrifices. This is helmet-shaped and is skilfully woven of thin strips of bamboo encrusted with gilt papier-mâché dragons, scrolls, and other emblems. It is fastened to the head by a large hatpin, with cords and tassel, thrust through the sides and back of the hat (fig. 10).

A hat that seems to be prescribed for the bridegroom at the time of the wedding ceremony is shown in figure 11. It is made of lacquered paper, covered with silk cut and folded into a wedge

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FIG. 10.—Ceremonial hat. (No. 77,058.)

FIG. 11.—Wedding hat. (No. 202,886.)

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shape, and depending from the back are three double tassels of red silk.

FIG. 12.—*a*, Mourner's hat (No. 77,066). *b*, Farmer's hat (No. 77,065).

FIG. 13.—Mourner's hat and headband. (No. 77,089.)

The largest hat worn in Korea is that of the farmer (fig. 12, *b*). It is conical, with hexagonal base, and is woven of split stalks of

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millet. The exterior and interior of the straw are of different color and form a pleasing variety in the weave. It is stoutly braced inside with hoops of bamboo and gives effective protection against wind and storm.

Confucianism prevails among the higher classes in Korea and its influence permeates all classes of citizens. Confucius gave the order that mourning for three years should be worn for the loss of either parent, a custom strictly followed by Koreans. White is a mark of mourning, and all articles of mourning costume are covered with sack-cloth. The mourning hat, or *pang gat,* is largely

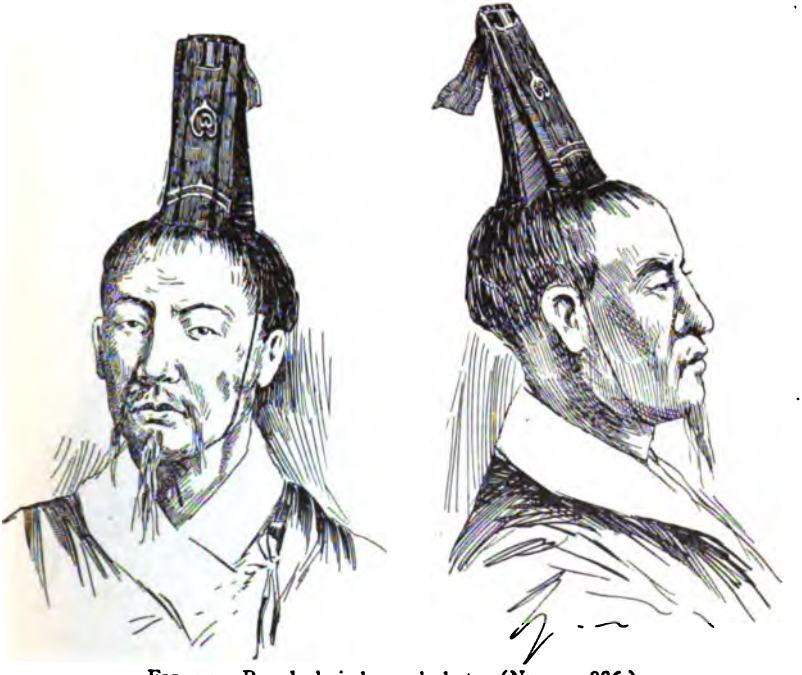

FIG. 14.—Royal chair-bearer's hat. (No. 202,886.)

in evidence in Korea (fig. 12, *a*) ; it is made of bamboo splints, the edges scalloped and finished with braiding, and is crowned with a rosette of bamboo. A frame to fit the head is fastened inside, and from it hang tying strings of twisted paper. It is 14 inches high and of 25 inches diameter, and is designed to hide the face, it being considered a grievous breach of etiquette to look into the face of a mourner. Taking advantage of this custom before Korea was opened to foreigners, Jesuit priests disguised themselves as mourners and lived among and taught the people for a long time

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without detection. When the King dies, the nobility wear the *samo* in white (fig. 9). In the house and at a certain period the mourner wears a cap and head-band like that shown in figure 13.

The royal chair-bearers are trained from youth to carry a palanquin with a quiet, swinging motion free from jar. They wear one of the most peculiar of Korean hats (fig. 14), made of several thicknesses of brown paper, covered with purple satin, the front decorated with designs in silver paper, and from the top hangs a piece of gauze silk 5 inches long by 4 inches wide. The hat is ∧-shaped, 10 inches high, 5 inches wide at the apex, and 4½ by 6 inches square at the base.

FIG. 15.—"Fly's head" hat. (No. 202,888.)

The official assistant's hat, or *pare muree,* shown in figure 15, is of delicately interwoven horsehair and strips of bamboo covered with black silk. It is cylindrical in shape, 6 inches high, 7 inches in diameter, and is known among the Koreans as the "fly's head." The position of official assistant, or *shu re,* can hardly be explained to the European. He is a kind of secretary, superintendent, and general factotum for his employer, and is far from being a popular person where he is known. Koreans consider the fly the personification of greed and shamelessness, for no matter how many times

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FIG. 16.—Royal musician's hat. (No. 202,887.)

FIG. 17.—Royal servant's hat. (No. 202,882.)

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the insect may be driven away from food, it will return to finish its meal. As the *shu re* seems to be solicitous only about his

FIG. 18.—House caps. (Nos. 202,881, 202,878.)

FIG. 19.—Banded house caps.

pecuniary remuneration, and cares nothing for reprimand or abuse, he receives no more consideration than a fly, and must wear on his head his badge of servitude, which resembles a fly's head.

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FIG. 20.—General's helmet. (No. 201,436.)

FIG. 21.—Soldier's helmet. (No. 128,344.)

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The hat of the royal musician (fig. 16), is shaped somewhat like the official hat, but having a higher crown, and tassels of red silk hanging from the sides and back. The projecting wings are square at the extremities. This style of head-gear is worn only by the royal band detailed to furnish music in the palace.

The hat of the royal servant is of buckram, covered with brown silk. It is most ingeniously folded flat, and when open assumes the oblique outline shown in figure 17. This hat is worn with a suit of the same color and a blue sash.

The Korean is never hatless. When in the house his head is covered with a gauze skull-cap (fig. 18), which is considered *en déshabille,* only intimate friends seeing it worn, and to appear with

FIG. 22.—*a*, Swordsman's hat (No. 202,879). *b*, Soldier's and constable's hat (No. 77,058).

it on the street would be the height of impropriety. The house hats are sometimes made in veritable nests, one over the other (fig. 19), varying in height, and in all of them the topknot can easily be seen through the meshes of the hat.

All of these hats are composed of bands of horse-hair, of different heights, some wider at the top than at the bottom, some cylindrical, others square in shape and nearly all open at the top.

There are a number of military hats, indicating different branches of the service, as shown in figures 20–23. The general's helmet (fig. 20), is a very elaborate affair, ornamented with brass dragons,

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phenix, Sanscrit prayers for victory, red plume, and trident-shaped brass at apex. The soldier's helmet (fig. 21), is padded with cotton and stiffened with perpendicular bands of iron riveted through the cloth. Other military hats (fig. 22–23), are pot-shaped, visored, made of felt stiffened with buckram and ornamented with bright-red tassels and plumes of birds.

Hats appropriate to the season of the year are worn by different individuals, the gentleman's winter hood being an example in

FIG. 23.—Musketeer's hat. (No. 202,880.)

point (fig. 24). This is of brocade, lined with red woolen cloth and bordered with otter fur, and is one of the few instances in which woolen cloth is used in Korea for any purpose.

The ornamental hood, an example of which is shown in figure 25, is placed upon the head of a very young child, and for its "protection" various characters are embroidered in the ribbon. The black ribbon at the back of the cap is removed when the child becomes able to speak.

The hat cover, or *kano*, is worn to protect the national hat from rain. It consists of a polygonal cone of oiled paper, folding like an umbrella (fig. 26), and is secured to the hat by a string of white paper, crossed under the chin and held by the hand. When not

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FIG. 24.—Gentleman's winter hood. (No. 77,080.)

FIG. 25.—Baby's hat and detail of same. (No. 77,079.)

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in use it is folded like a fan and carried in the sleeve. This is an interesting form of umbrella.

For the care of the hat, hat-boxes are used; these are woven of bamboo splints and covered with yellow oiled paper. An example is shown in figure 26.

FIG. 26.—Umbrella or hat cover (No. 77,019), and hat-box (No. 151,628).

Usually the women cover the face with their outer robe or dress, so that earlier writers about Korea affirm that the women wear no hats. In figure 27, *a*, is shown a small satin-covered cap, having an ornamental button of jade on top, worn by women of the official class. Figure *b* represents a similar hat in white for mourning,

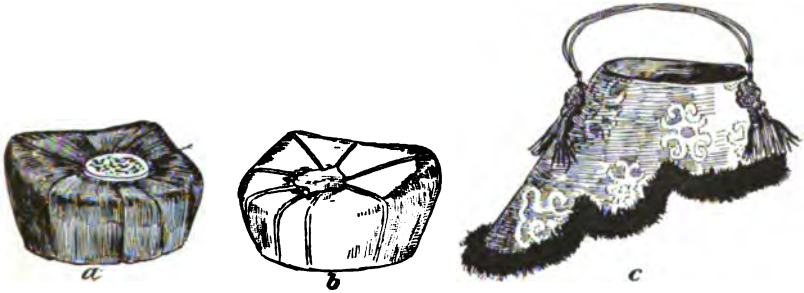

FIG. 27.—*a*, Lady's satin cap. *b*, Lady's mourning cap. *c*, Lady's winter hood.

and figure *c* is a winter hood of brocade, trimmed with fur and ornamented cords tied in fancy knots. In figure 28 are shown

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methods of hair-dressing, and another style of hat with a streamer hanging down the back over the hair-knot, somewhat after the manner of the Tibetan woman.

As might be expected from the complexity of headdress, Koreans display the utmost skill in such manufactures. Nowhere in the world can better horsehair work be found, some of the hats showing as many as five different styles of hand-weaving so fine that only with a powerful lens can the stitches be seen.

FIG. 28.—Women's hats and mode of hair-dressing.

It is probable that the headband (fig. 3) is the oldest style of headdress in Korea, and that the more complicated forms have been evolved during centuries of culture. Much of Korean custom is a survival of the influence of the Ming dynasty in China, whose culture was widespread in Korea.

There is one specimen in the National Museum which shows the Korean conception of a European hat. It has a high crown and is exquisitely made of horsehair and bamboo strips lacquered. It is an example of the revolutionary tendency of the reformers of 1895, and was one of the causes of the death and dispersion of those who would reform Korea in a year.

There are in all sixty-five different kinds of men's hats and about twelve different styles for children. Women are almost hatless, for they have only about half a dozen styles.

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The people of Korea are rapidly adopting European ideas by introducing new laws, post offices, post roads, railroads, electrical plants, and many other improvements, and among the higher classes European dress has been adopted to some extent, yet changes of dress among the masses will come about but slowly, and it will be many years before the Korean hat will be relegated to the museum.

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THE HODGKINS FUND OF THE SMITHSONIAN INSTITUTION

By HELEN WALDO BURNSIDE

In September, 1891, Mr. Thomas George Hodgkins, of Setauket, New York, after requesting and receiving information in regard to the aims and objects of the Smithsonian Institution, placed in the hands of the Secretary the sum of $200,000, as a gift to the Institution, which was formally accepted at a specially called meeting of the Board of Regents, October 21, 1891.

Mr. Hodgkins stipulated that the income of $100,000 of his gift should be devoted to the increase and diffusion of more exact knowledge in regard to the nature and properties of atmospheric air in connection with the welfare of man; it was not the donor's intention that the Fund should be limited to special investigation in sanitary science, but that the atmosphere should be considered in its very widest relationship to all branches of research. The income of the remaining $100,000 was to be applied to the general purposes of the Institution.

Additional gifts were afterward received from Mr. Hodgkins, and, in finally closing the affairs of his estate, he made the Smithsonian Institution his residuary legatee, the general Hodgkins Fund being thus increased by a sum the exact amount of which is not yet definitely known.

In consulting with the Secretary and Assistant Secretary on the application of his gift, Mr. Hodgkins referred to the experiments of Franklin in atmospheric electricity, as an investigation germane to his foundation, and mentioned also the prize awarded by the French Academy of Sciences to Paul Bert for his discovery in regard to the influence of oxygen on the phenomena of vitality, expressing the hope that it might be thought advisable by the Institution to offer some very considerable prize which, by its magnitude, would call general attention to the subject in which he was so greatly interested.

With the intent of thus furthering the donor's wishes, the Hodgkins Prize Competition was announced in March, 1893, a prize of

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With the author's compliments

HINTS OF EVOLUTION IN TRADITION.

By David MacRitchie,

Author of "The Testimony of Tradition," "Fians, Fairies, and Picts," etc.

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The original paper of which this is an amplification was read before the British Association (Section of Anthropology) at Glasgow on 18th September 1901. It will be evident to students of traditional lore that the statements adduced in this pamphlet in support of its main contention might be multiplied to an almost indefinite extent. But presumably the illustrations here given will suffice to make the meaning of the author clear.

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HINTS OF EVOLUTION IN TRADITION.

In the search for "missing links" between man and the lower animals, it is sometimes assumed that one must necessarily look very far back in time before one can hope to find traces of beings who might as fitly be called brutes as men. This idea is based on the assumption that man has advanced in one united body, from stage to stage of development, and that his brute-like kindred or ancestors must have died out in remote ages. But the very idea of evolution presupposes the co-existence of many various types, and we need only look at the living races of the world to see this marked difference. Of certain contemporary races it may be accurately said that they are several degrees nearer the brutes than are the members of the great ruling nations; and quite recently we have received accounts of people specially distinguished by brute-like characteristics. Mr Ewart Grogan first encountered these people in 1898, in the Lake Kiva neighbourhood, midway between Khartoum and the mouth of the Zambesi. He refers to them as "ape-like creatures," and describes the first one that he was able to inspect as "a tall man, with the long arms, pendant paunch, and short legs of the ape, pronouncedly microcephalous and prognathous. . . . The stamp of the brute was so strong on them," he further states, "that I should place them lower in the human scale than any other natives I have seen in Africa. . . . Their face, body, and limbs are covered with wiry hair, and the hang of the long, powerful arms, the slight stoop of the trunk, and the hunted vacant expression of the face made up a *tout ensemble* that was a terrible pictorial proof of Darwinism."* Still later accounts of the same people have been furnished by Sir Harry Johnston, who makes the noteworthy observation that they "must not be confounded with the Congo dwarfs, who are quite distinct in appearance, and from whom indeed they differ markedly in stature." Mr Grogan also regards the dwarfs as a different and a superior race to these ape-like men, although he speaks of them as "of similar build." This is interesting, because other writers describe these dwarfs as having certain simian characteristics. For example, the first specimen seen by Mr Albert Lloyd was mistaken by him for a monkey. The dwarf was perched high up in a lofty tree, and when he saw he was observed he swung himself from branch to branch with the

* *The Geographical Journal*, August 1900, p. 173.

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ease and rapidity of an ape. Mr Lloyd had his gun up to shoot him, when his native guide cried out that it was a man.

Thus, in that region of Africa hitherto inaccessible to Europeans, we have still two varieties of beings who, although they may be rightly called human, are yet many degrees nearer the anthropoid apes than we are. No one would assert that they are actually anthropoid apes; but they are clearly pithecoid men. If, therefore, such lowly forms of mankind may yet be found in these days, the inference is that before the expansion of modern civilisation it must have been a common experience for a nation of conquerors to find itself brought into contact with people who were not only savage, but lower than mere savages. In such circumstances memories of such a contact must have survived, in oral tradition, if not in written history. And, as a matter of fact, we do find hints of brute-like men in the legendary lore of many countries. Whether these references were all drawn from one common source, and merely repeated by tale-tellers, or whether they had diverse origins, need not be discussed here. What I wish to draw attention to is the existence of the references.

Thus in the Welsh tale of *Kilhwch and Olwen* it is stated that one of the adherents of King Arthur (Sgilti Yscawndroed) had this peculiarity that "when he intended to go upon a message for his lord, he never sought to find a path, but knowing whither he was to go, if his way lay through a wood, he went along the tops of the trees"—after the fashion of Mr Lloyd's African dwarfs, and of actual apes. Again, among the same followers of Arthur, one was like "an auxiliary devil; hair had he upon him like the hair of a stag"; a brute characteristic still seen among some of the races referred to. And another of this company is styled a "half-man." The "half-man" is encountered in the folklore of many European countries. The term is sometimes interpreted to mean "a twin";* and, again, it is held to denote one half of a man split from top to toe, with only one eye, one arm, and one leg,—an impossible being. Yet another definition is offered by Lady Charlotte Guest, in her translation of the Mabinogion, where she explains that the *hanner dyn* or "half-man" of Welsh tradition ought to be taken as an allegorical expression of "the force of habit." In illustration of this, she cites the story of King Arthur's encounter with a half-man, whom, after a severe struggle, he overcame. Obviously, however, this interpretation will not agree with the other references to half-men. For example, the mention of "Ewaedan, the daughter of Kynvelyn Kendawd Pwyll the half-man," unquestionably indicates that the father of Ewaeden was a real personage. None of these definitions,—"a twin," "force of habit," or the sectional half of a man,—will bear general application. But a rational explanation seems to be suggested by the Scandinavian complementary terms "*half-rise*" and "*half-troll*." "The name *troll* is never given to any man or woman of

* From the Gaelic *leth-aon*, *i.e.*, "half one," signifying a twin-child.

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the Saga relating to the Asa race," observes Professor Nilsson; "it was given only to the foreign (*i.e.*, aboriginal) tribes, who were looked upon as conquered." * He points out, however, that eventually a mixed race came into being; and cites as one of its representatives a certain "Halbjorn, surnamed Half-Troll, which shows that his mother was descended from a troll race." † Now, to be half a troll implies that one is half something else; and as the invading Scandinavians did not regard the trolls as human, it is obvious that Halbjorn was half-*troll*, half-*man*. In other words he was "a half-man." It must not be forgotten that many races restrict the term "man" to those of their own nation alone. But I believe it will be seen that something more than this is signified by the traditional "half-man." ‡

The explanation of "half-man" just given is obviously the most reasonable. The half-men (*halvermannekens*) of Flemish tradition are certainly not understood by Flemish people to have been beings having only one eye, one arm, and one leg. Still less are they understood to have been a race of "twins," or to symbolise the force of habit. All the traditions regarding them indicate that, like the Scandinavian trolls, they were a primitive people occupying cave-dwellings and chambered mounds or underground grottoes.

But the *degree* of primitiveness of such races is not easily ascertained. According to Gudmund Andreas, cited by Keightley, § the dwarfs of Scandinavian tradition were so very primitive that they could not be called human. "The Duergar are described as being of low stature, with short legs and long arms reaching almost down to the ground when they stand erect." That is to say, those dwarfs were more at ease when running on all-fours, in ape fashion, than when using the erect attitude. This tradition, therefore, must either be regarded as a conception forestalling, in a remarkable manner, the scientific deductions of modern evolutionists; or else it is the simple memory of an actual people, encountered at one time or another by the ancestors of the Scandinavians. Mr Frederic Hall, who quotes Keightley, is inclined to relegate such traditions "to a period when the most cultured race then existing had not long, if at all, emerged from the state in which the Australians and the Veddas now are," when races of still lower type were "living on the fringe of habitable space, and compelled so to live in consequence of their marked inferiority to the dominant

* Nilsson's "Primitive Inhabitants of Scandinavia," London, 1868, p. 239.

† *Op. cit.*, p. 221.

‡ Nilsson not only identifies the name "troll" with "thrall" or "serf," but also with "goblin" and "pigmy." Other definitions are "gnome," "ogre," "elf," "wicked person," "hobgoblin," "magician," and "giant." (*See* Larsen's "Dansk-norsk-engelsk Ordbog," s.v. "Trold," and Oman's "Svensk-Engelsk Hand-Ordbok," s.v. "Troll"). This last definition appears to identify "*troll*" with "*rise*," and to conflict with the interpretation of *troll* as "dwarf." But this distinction will be seen on examination to be superficial.

§ "Fairy Mythology," p. 67.

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races," and when this lowest caste of all was "many degrees nearer the brute, and immeasurably more removed from the average human type than those Australians and Veddas now are."* That is an excellent hypothesis, it seems to me. But Mr Hall was not then aware that representatives of races more brute-like than either Australians or Veddas still survive, indicating a much more numerous population of the same type, within historic times.

Sir Daniel Wilson, in regarding Shakespeare's *Caliban* as "the missing link," observes:†—"The idea of beings, monstrous and brutal in every characteristic, and yet in some not clearly defined sense human, as the inhabitants of strange lands, was familiar not only in Shakespeare's day but long before. Mediæval chronicles describe the Huns who ravaged Germany, Italy, and France in the ninth and tenth centuries as hideous boar-tusked, child-devouring ogres." There does not, however, seem to be much exaggeration in this description. The Huns were, of course, racially Ogres, *i.e.*, Ugrians; and it is from them or some other division of that family that we get the familiar name of our nursery tales. More than one historian states that they practised cannibalism; and all agree in calling them ugly. As for their boar-tusks, that probably denotes that the canine teeth, even yet prominent in individual cases among ourselves, were distinctly so in the Huns as a race. It may be that the mediæval writers exaggerated their characteristics; but there are indications that the Huns were representatives of a more primitive form of humanity than Europe can now furnish. For, of course, the modern Magyars—a handsome people—cannot be recognised as bearing any physical resemblance to Attila's Huns. As Dean Milman observes:—"Whoever has seen the Emperor of Austria's Hungarian guards will not readily admit their descent from the Huns described by Sidonius Apollinaris."

It is remarkable how the simian feature of excessively long arms, attributed to the Scandinavian dwarfs, has maintained itself in the minds of people down to recent times. Scottish tradition asserts, both in the case of Wallace and Rob Roy, that those heroes had arms of such length that they could tie their garters without stooping. Even so modern a writer as Mr Rider Haggard gives to two of his heroes‡ this attribute of unusually long arms; an unconscious tribute to primitive man.

Sir Walter Scott's remarks in his novel of *Rob Roy* are particularly noteworthy in this connection. Referring to Rob Roy's great length of arm, Osbaldistone observes (chap. xxiii.):—"It gave something wild, irregular, and, as it were, unearthly to his appearance, and reminded me involuntarily of the tales . . . of the old Picts who ravaged Northumberland in ancient times, who, according to tradition, were a sort of half-goblin, half-human beings, distinguished, like this man, for courage,

* "The Pedigree of the Devil," London, 1883, pp. 72 and 220.

† "Caliban: The Missing Link," London, 1873, p. 14.

‡ In "King Solomon's Mines" and "She."

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cunning, ferocity, the length of their arms, and the squareness of their shoulders."

Here we have a very interesting statement. Whether the historical Rob Roy or the historical Wallace was characterised by excessively long arms, is a minor consideration. When that particular trait is so much associated with the idea of a warrior that even a nineteenth-century novelist gives it to his nineteenth-century heroes, it would be no wonder if tradition assigned that quality to Wallace or Rob Roy without warrant. But the tradition quoted by Scott asserts that the Picts as a race were thus characterised. It is not only in Northumberland that the Picts are regarded as different from ordinary men. The same idea is current in Scotland; and other writers than Scott refer to it. But it is important to note that Scott's very words place the Picts in the same category as those half-trolls, such as the Scandinavian Halbjorn, surnamed Half-Troll, already mentioned. Nilsson's favourite synonym for *troll* is *goblin;* the term here employed by Scott. According to this tradition, therefore, the Picts belonged to the class described by other races as "half-men."

In this connection, it is interesting to note what Professor Rhys says with regard to the personage known in Manx tradition as the *fenodyree.* The term *glashtyn* * is held by him to denote the same being, or race of beings; and with these he also brackets the *glaisrig*, † "a female fairy or goblin, half-human, half-beast." The fenodyree, then, is identified with or akin to a being that is anthropoid rather than truly human. For, although artists have often translated the expression "half-human, half-brutal" as denoting a being whose upper half was perfectly human, while the lower half was that of a brute—a quite impossible combination,—it is obvious that the term is really synonymous with "anthropoid." This was clearly understood by those who translated the Bible into Manx-Gaelic in the year 1819. For, in the passage in Isaiah (xxxiv. 14) which says: "The wild beasts of the desert shall also meet with the wild beasts of the island, and the satyr shall cry to his fellow," the word *satyr* is rendered by *fenodyree.* In the Vulgate, the Latin equivalent is *pilosus*, "the hairy one"; and Professor Rhys points out ‡ that the fenodyree is to be identified with the hairy satyr of classic tradition. And all of these terms suggest a highly developed anthropoid ape, or a pithecoid man. In the passage from Isaiah just cited, "satyr" is merely rendered as "the wild" in the sixteenth-century Bishops' Bible and in Rogers's translation; but in another passage (Isaiah xiii. 21) both these versions use "ape" instead o "satyr";—"and *apes* shall daunce there." It would be interesting to follow out the various synonyms for the original Hebrew word in the many translations of the Bible. Grimm points out that Martin Luther renders it by "kobold" in the passage in Isaiah first cited; and "kobold" is a

* Manx-Gaelic. † Scotch-Gaelic.

‡ For the information here cited I am indebted to Professor Rhys's "Celtic Folklore," Oxford, 1901, pp. 287-289.

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German equivalent of the Manx "fenodyree." In the Welsh Bible *ellyll* is used; and that word signifies "satyr" and "elf." The Gaelic translation employ *fiadh-dhuine*, "wild-man," in one passage, and "goat" in another. But, as shown by Dr Hayes O'Grady, "goat" (or rather "goat-head") is a Gaelic term denoting a satyr. It thus appears that, in the minds of those various translators, of different countries, the terms *pilosus*, *fenodyree*, *kobold*, and *ellyll* or *elf*, were all understood to be cognate with *wild man*, *ape*, and *satyr*.*

Professor Rhys refers more fully to the fenodyree in these terms:—"The Manx brownie is called the *fenodyree*, and he is described as a hairy and apparently clumsy fellow, who would, for instance, thrash a whole barnful of corn in a single night for the people to whom he felt well disposed; and once on a time he undertook to bring down for the farmer his wethers from Snaefell. When the fenodyree had safely put them in an out-house, he said that he had some trouble with the little ram, as it had run three times round Snaefell that morning. The farmer did not quite understand him, but on going to look at the sheep, he found, to his infinite surprise, that the little ram was no other than a hare, which, poor creature, was dying of fright and fatigue." Other versions of the same story are mentioned by Professor Rhys, the hero of one of them being the idiot Peredur, in Breton folklore. A Scottish version makes the brownie collect a number of hares along with the sheep; and, when he had got them all gathered into the fold he exclaimed: "Confound thae wee grey anes! they cost me mair trouble than a' the lave (rest) o' them."†

It may be noted that both the Scottish brownie and the fenodyree are described as naked people with shaggy skins; in which respects they resemble the African dwarfs and some of the Aïnos of Japan. But they suggest a still lower type by their stupidity and by their more than human swiftness of foot—or perhaps one ought to say of hand and foot.

Another Scotch story which represents a brownie as a being very low in the scale of humanity is thus related:—

A brownie (described as a "big‡ hairy man," and entirely naked) was in the habit of nightly entering the kitchen of a certain farmhouse, by means of the chimney, and there amusing himself in a variety of ways, much to the annoyance of the young women who slept in the kitchen. The fire-place was then situated in the middle of the room, and one of the brownie's favourite diversions was to slide down the chain that hung from the chimney, and, placing his foot in the hook or "crook" from which the cooking-vessels usually hung, to swing himself to and fro, some-

* The Dutch "Biblia" of 1663 (Elzevir, Leyden) has *duyvel* in both these passages in Isaiah. This, again, is a mediæval equivalent for *kobold*, etc.; although other meanings have been evolved from it.

† "Historical and Traditional Tales of the South of Scotland," Kirkcudbright, 1843, p. 82.

‡ This is an exceptional statement, brownies being usually of small stature.

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times the whole night through. This became unendurable, and one night one of the girls, just before going to bed, heated the crook almost red-hot. Soon after, the brownie made his usual descent. Next moment there was a loud shriek of pain, and the brownie had sprung up on the roof outside, where he sat for the rest of the night, howling and moaning and gibbering —and planning revenge.

On the following day, the girl was arranging to bake the daily bannocks, and (according to the then custom) had heated a large smooth stone in the fire, to act as griddle. Just as she had pushed this hot stone on to the open floor, the brownie sprang out from a place of concealment, and, seizing the girl, forcibly seated her in such a way that she was brought into close contact with the glowing block. But on hearing her shrieks of pain and terror, his resentment at once abated; and as the readiest antidote he bore her out of doors and plunged her into the stream. To his astonishment, however, her struggles and screams were intensified, for she thought he was now about to complete his revenge by drowning her. So, finding himself unable to please her, he drew the girl from the water, laid her gently on the bank, and went away muttering to himself in a puzzled fashion:—"Ye're a queer sort o' a bodie, ye 'gree wi' neither het nor cauld!" *

I may cite yet another story which shows a Scottish brownie as a not unfriendly companion of farm-servants. This brownie used to work daily with the other servants, but in order to reach the farm † from his abode he had to cross the river by a ford. One morning, after a night of heavy rain, the swollen river was unfordable, and no one expected the brownie. He did, however, turn up—a little late. When asked how he had got across the river, he replied, "I cam roond by the brig (bridge)," indicating a detour of several miles. And afterwards, the local advice to any one who wanted to cross the river when in flood was—"Gae roond by the brig, as Broonie did."

In this last instance, the brownie is not represented as less than human, although it is clear that he was regarded as different from the rest of the servants. Very similar is the relative position between ordinary Scottish farm-folk and another brownie, of whom it is said that he lurked in some obscure corner of the house during the daytime, but emerged late at night and proceeded about his work. "When the inmates of the kitchen sat too late round the fire, he appeared at the door and warned them off. 'Gang a' to your beds, sirs, and dinna put out the wee grieschoch (embers).'" Stories of this kind, in the British Isles and on the Continent, are very numerous, and they all point to a contact between two very different

* "Legends of Scottish Superstition," Edinburgh, 1848, pp. 28-30. The writer adds that the saying has since passed into a proverb. "When a person is so very querulous as not to be pleased with anything that is offered, he is said to be 'like the brownie's lass—a queer sort o' a bodie, that 'grees wi' neither het nor cauld.'"

† On the lands of Cash, in the parish of Strathmiglo, Fifeshire.

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races. In some instances there are tokens of a difference of language also. Thus, Grimm tells of the earth-mannikins on the Ramsflue—in Switzerland, apparently—who lived in a cave with a narrow entrance.* They cooked nothing, ate roots and berries, and bathed in the neighbouring brook. One of their number acted as sentinel, and at his danger-signal, a whistle, the dwarfs were up the hills faster than hares, and slipped into their cave. They never hurt men, but often helped them. One incident is thus concisely related by Grimm (Stallybrass's translation) :—"The farmer at Hard was alone loading, a dwarf came down, helped to finish, got on the waggon, did not properly run the rope over the bind-pole, it slipped off, the pole flew up and hurt him badly. Farmer: 'I wish it had happened to me.' Dwarf: 'Not so ; self do, self have.' Got down, picked a herb, and cured the wound instantly. Often (continues Grimm) when honest folk cut hay or tied corn, dwarfs helped them to finish and get it under shelter ; or in the night, if rain came on, they brought in what was lying cut, and didn't the people stare in the morning!" In considering these Swiss accounts, it is quite worth remembering that the remains of actual skeletons of dwarfs and of people of ordinary size have been found in friendly proximity near Schaffhausen, and have been carefully described by Professor Kollmann of Basel. But stories of the "self do, self have" kind are widespread, occurring in Celtic as well as in Teutonic folklore, and they all suggest contact with a people whose own language was not Aryan. They moreover indicate, in many cases, a race of beings whose intelligence was almost, or altogether, infra-human.

In a recent number of the *Quarterly Review* (July 1901), a reviewer of certain books of travel relating to "Negro Nileland and Uganda," gives expression to opinions which are closely in agreement with what has been said in this article. After describing the black and yellow dwarfs of the African forest, with their "arms somewhat long in proportion to the body," their furry skins, and, in the case of the yellow dwarfs, their long beards, he goes on to say :—

"These pygmies easily fly into violent rages, very much after the style of apes and monkeys [or of the pixies of Devonshire tradition]. They have a strong sense of humour and a great power of mimicry (another resemblance to the apes). Their mental abilities, though apparently so undeveloped in their natural lives, become considerable when brought out by kind treatment at the hands of Europeans, thus producing a strange contrast with the apishness of their appearance and their actions. The pranks they play, half in malice and half in fun, on their full-grown neighbours, their remarkable power of concealing themselves rapidly in vegetation, remind one (in the accounts of modern travellers) over and over again of the descriptions of gnomes and elves in European legends ; so much so as to lead one to suppose that anciently this dwarfish race did really inhabit the greater part of Europe coincidently with the later developed types of full-grown humanity, who, before exterminating this thievish, prankish little folk, preserved

* In at least one particular, these earth-mannikins resemble the dwarfs of the Heidenflue, in Alsace. (See pp. 617, 618 of the *Revue des Traditions Populaires*, Paris, December 1901).

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the memory of them in a fantastic form as a fairy race of quasi-supernatural beings. . . . And, like the elves and goblins of legend, the dwarf folk [of Africa] can be kindly to those whom they like; often (as in fairy tales) performing some friendly little service unseen, or leaving some gift during the hours of darkness."

Thus, whether we consider certain living races or examine the traditional accounts of brownies and their kin, the conclusion arrived at is the same. The African dwarfs suggest alike the little people of tradition, and, in some of their ways, existing apes. Conversely, the traditional accounts awaken the same comparison. "House-goblins, like the moss-folk," observes Jacob Grimm, "have in them something of the nature of *apes*, which also are trained to perform household tasks." And he points out that Gothic *tumbo*, a "giant," is translated by Latin *stupidus;* and in this connection he cites such European place-names as Affenberc, Apenberg, Affental, Narrenberg, and Gauchsberg. "Note that the *iotunn* too is called *attrunnr apa, simiarum cognatus*, Sæm. 55a." It may be remarked that some of these names, such as *tumbo* and *iotunn*, do not denote beings of dwarfish size; nor is it contended in this paper that all the early varieties of pithecoid men were necessarily of small stature—in spite of the fact that dwarfs figure frequently in the question. But it must at the same time be borne in mind that in several instances the term "giant" does not denote great stature. For example, there is an Irish tradition which states that the souterrains of Ireland were the abodes of "giants"; and yet a modern Irishman has often great difficulty in squeezing his way along those underground dwellings. The modern "savage," or, in some cases, "anthropoid," may be offered as indicating the true meaning of the legendary "giant."

Grimm again points to the elves as beings of a low order of intelligence when he states that German *ölp* (= elf) and its adjectival form *elbisch*, denote "an awkward silly fellow"; * a definition which is paralleled by the English expression, "a stupid oaf"—"oaf" being merely another pronunciation of "elf" (French *aulfe*). Evidence of the same kind is found in Gaelic folklore, where the elf-children substituted for those stolen from the Gaelic population were beings of weak intellect. It is for this reason that one of the Gaelic words for a changeling, *amadan*, is still used to signify "a fool." The radix *amh* signifies a dwarf, a fool, and a simpleton; and the cognate term *amad* has also the meaning of fool. Some such affinity may further be traced in *ab* and *apag* (ape), and *abhag* or *abhac* (dwarf); and in the fact that Welsh *nar*,† is interpreted by "ape" as well as "pigmy." By themselves these etymologies might have little or no force; but it will be seen that, when taken in connection with the foregoing remarks, there is a certain consistency running through them.

* "Teutonic Mythology," Stallybrass's translation, London, 1882, p. 443. The other references cited will be found at pp. 441, 528-9, 680-1, 1432, 1441, and 1488-9.

† This word *nar* seems to be rare in Wales; and Professor Rhys states that its etymology is obscure. It is possibly a Flemish importation; in which case its present Flemish meaning (fool) would indicate that *nar*, *aulfe*, and *amadan* are parallels.

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These observations are necessarily much condensed. But they serve to show that the various European nations still retain a confused memory of intercourse with races that were anthropoid rather than human. There may well be a difference of opinion as to the period of time and the locality in which this contact took place. It may be argued that in some cases it is recent. Or, on the other hand, such traditions may be pushed back to a remote antiquity,—their various forms, in modern countries, being all derived from one common source. In a number of instances, however, Europe is clearly indicated as the locality; and the period is quite within the historic range.

Since writing the above, I have seen Sir Harry Johnston's account of the "Pygmies and Ape-like Men of the Ūganda Borderland," contributed to the *Pall Mall Magazine* (February 1902), in the course of which the following observations occur:—

"Other dwarf races of humanity belonging to the white or the Mongolian species may have inhabited Northern Europe in ancient times, or it is just possible that this type of Pygmy Negro which survives to-day in the recesses of Inner Africa, may even have overspread Europe in remote times. If it did, then the conclusion is irresistible that it gave rise to most of the myths and beliefs connected with gnomes, kobolds, and fairies. The demeanour and actions of the little Congo dwarfs at the present day remind one over and over again of the traits attributed to the brownies and goblins of our fairy stories. Their remarkable power of becoming invisible by adroit hiding in herbage and behind rocks, their probable habits in sterile or open countries of making their homes in holes and caverns, their mischievousness and their prankish good-nature, all seem to suggest that it was some race like this which inspired most of the stories of Teuton and Celt regarding a dwarfish people of quasi-supernatural attributes. The dwarfs of the Congo Forest can be good or bad neighbours to the black people, according to the treatment they receive. If their elfish depredations on the banana groves, or their occasional thefts of tobacco or maize are condoned, or even if they are conciliated by small gifts of such food being left exposed where it can be easily taken, they will, in return, leave behind them in their nightly visitations gifts of meats and products of the chase, such as skins or ivory. I have been informed by some of the forest negroes that the dwarfs will occasionally steal their children, and put in their places pygmy babies of ape-like appearance —changelings, in fact,—bringing up the children they have stolen in the dwarf tribe."

It will be observed that these remarks coincide so closely with those quoted (pp. 8-9) from the *Quarterly Review* article as to make the authorship of that article hardly a matter of doubt. But each quotation has something that the other lacks, and together they give us an excellent idea, from a most reliable source, of the chief characteristics of this primitive race.

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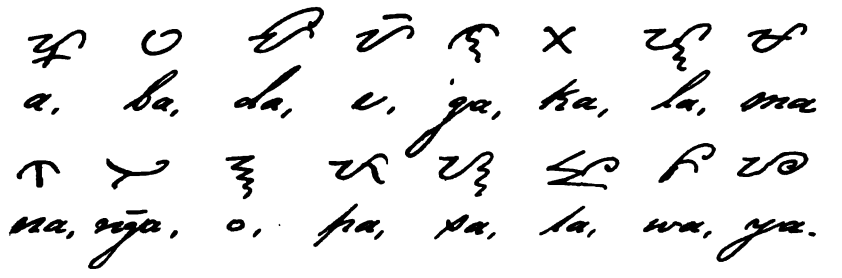
In November, 1904, the Insular Government established in the barrio of Iwahig (now Iualit settlement), in the Bay of Puerto Princesa, a penal colony consisting of a superintendent, one assistant and more than 300 prisoners. They began to clear off and develop the soil, to plant rice, corn, and vegetables and notwithstanding the short space of time since the establishment of the colony it can be said that progress has already been made; for even now they are beginning to avail themselves of the products, especially the vegetables.

Apart from the Christian population in the northern part of the island and not exceeding 8,497 souls, and the Mohammedans more or less numerous, who dwell along the coasts of the southern part, the aborigines may be classified into five groups. They are the following:

Tagbanuas Apurahuanos

This tribe is probably the most numerous in the island, occupying almost the entire central part, including the eastern and western coasts. The principal rancherias on the eastern coast are Iwahig, Ira-an, Aborlan, and Tigman; on the western coast, Virong, Apurahuan, Apitpitan, and Napsahan in the south. Their dialect differs from that of the semicivilized Tagbanuas and the Christians of the north.

Of the five tribes occupying the southern part of the island and a small portion of the north, the Apurahuanos who live in the rancherias enumerated above are the only ones meriting any special mention. They are mild, gentle, and courteous in their trading. Besides, they are the only ones who know and use a peculiar writing similar to that formerly employed by the Tagalos of Luzon. In order to form an exact idea of the construction of these letters or characters which the Tagbanuas Apurahuanos (the same as Inagahuanos) use in their writing, there are placed in succession the signs composing the alphabet.



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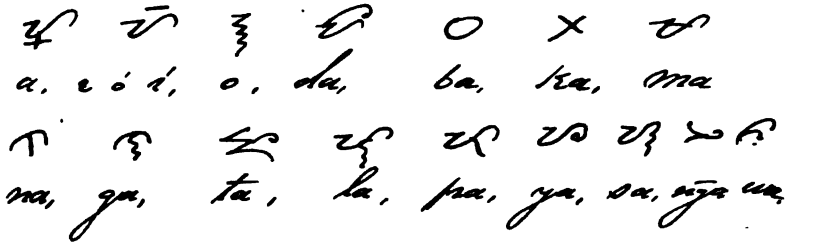
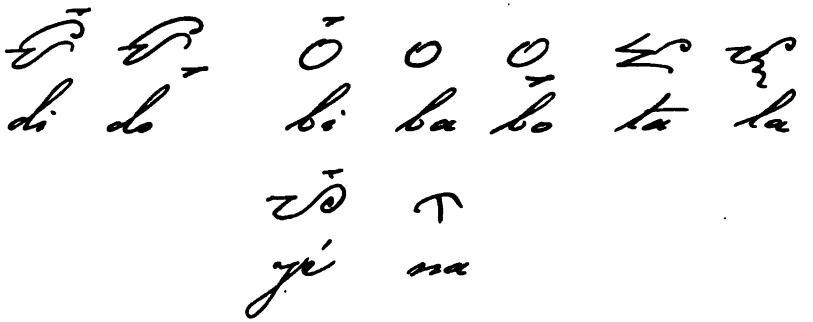
The true position of this alphabet as far as I have been able to observe in the various writings of this tribe is as follows:



The first three corresponding to "a," "eói," and "o" and the last letter "ua," are vowels and do not admit of any variation in their denomination; while the remaining fourteen composed of semi-vowels and consonants, form different sounds, according to the triangular-shaped mark placed either above or below the character and which is an essential part of each of these characters. The rules of orthography of this writing demand this in order to express in a clear manner when the character should be read "bi, la, ba," or when it should be "bo," for the characters are words and not a real alphabet. The use of the triangular mark is indispensable. Without it, it would be impossible to form entire phrases and complete words easily understood. For the better comprehension of the reader we will illustrate with a simple example.

As has been seen above, the natural denominations of these letters composed of consonants and semi-vowels are: "ba-ba" to express our "b"; "da-da" to express our "d." However if the triangular mark is placed above these characters it then will be "bi, di"; if it is placed below, the sound then becomes "bo, do."



The Tagbanua alphabet lacks the letters c, f, i, g, ll, q, r, v, x, z, of the Spanish alphabet and for this reason the sound of the word

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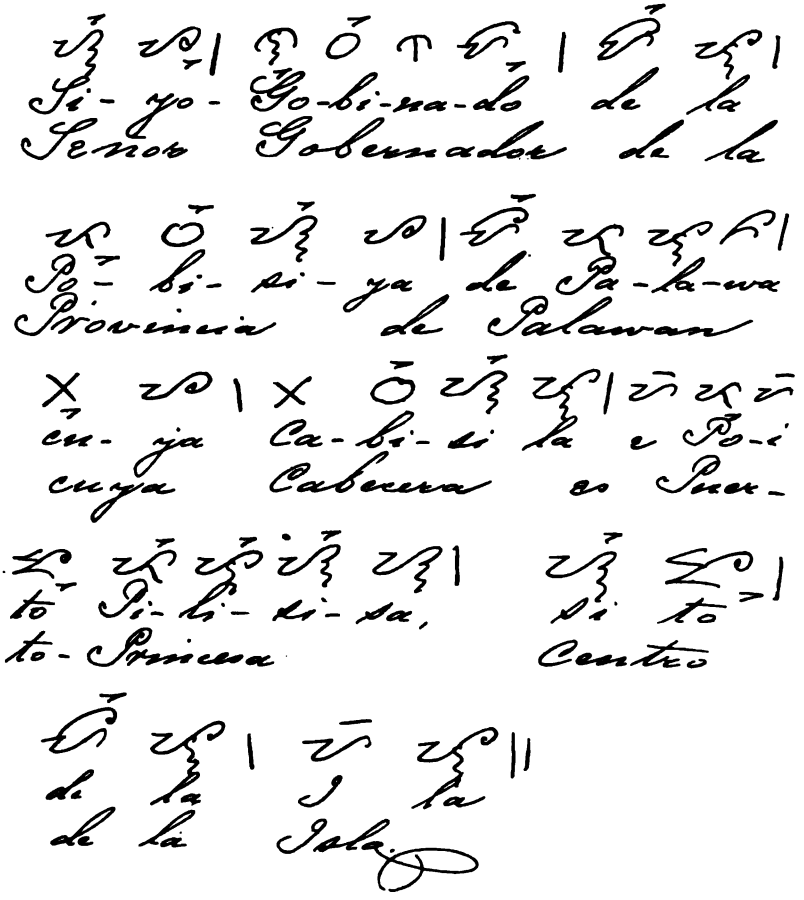
is not only harsh but even appears to cause confusion among the Tagbanuas themselves who speak this dialect, as will be observed in the following example:



We see from the above example that the letter "i" very frequently is substituted for "r." In my opinion it is very necessary to know the language of this tribe in order to understand the alphabet. We need not give further illustrations, for these are sufficient. We will now speak of the manners and customs of the people.

The continual contact of this tribe with the Moros of the south during a period of many years has caused them to clothe themselves in a manner similar to the Moros. The women, however, do not wear the trousers as the Moro women do, but they wear the patadiong of the Christians of the north of the island.

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The arms, generally, are the blow-gun and arrow, in the use of which those who live in the interior are very skilled. Those who live along the coast use "armas blancas" such as the "badon" or Moro kris and the spear, and there are some who use a musket of very old pattern. With these arms they defended themselves against the attacks of the Moro pirates from Jolo and Mindanao as well as from the Moros of southern Palawan. These attacks occurred very frequently during the years when Moro piracy reigned in nearly every part of the Philippine Archipelago and hostile incursions did not cease until the year 1876 when, thanks to the efficient forces of General Malcampo (of grateful memory) then the Spanish Governor of the Philippines, Jolo was taken.

The character of this tribe is very peaceful in its dealings and very hospitable. There is never war among them, neither does one rancheria rise against another. All dissensions among themselves are settled by the maguegares (nobles) or old men who exercise authority and who form a kind of council in which they hear and judge all the cases submitted to them. Of the order of hierarchy of these maguerares we will speak later.

When they receive into their home any stranger of distinction, especially one in authority, they endeavor to please him in every possible way. The young women are resplendent in their best attire, especially the wives of the chief, who usually has two, polygamy being permitted. The rich men of the tribe, those in authority, and the head men of the rancherias, always hold in reserve certain objects such as cups, plates, glasses, bowls, which they carefully guard, using them only on occasions when strangers of some pretence may present themselves. When visitors are entertained, on the table of the aristocrat is boiled rice placed upon a large metal dish, yellow in color and known as jalam, surrounding this are the bowls known as barong, containing meat, salt, and various foods prepared according to the mode of the country. A large metal basin holding water, and which at times serves as a finger bowl, is placed upon the table and into it is dipped the glass with which to take the water. Each large plate or jalam prepared in the way described is for the use of one person only, thus obliging each noble or maguegar to provide himself with a number of jalams and large metal cups. These objects are of great value to the owners and are bought from the Moros at a price more or less dear, giving in exchange for them almaciga, wax, and bejuco which they gather from the mountains. There are no dining tables, but the guests sit upon the floor. Be-

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cause of a feeling of embarrassment or shame neither the host nor any member of his family will dine with the visitors, except on rare occasions when it has happened that the visit has been repeated.

The dinner being finished, the guests rise and each betakes himself to whatever part of the house pleases him. Immediately the hostess who during the time the guests were eating was preparing the betel, presents herself to each one with the salapa in hand containing buyo, lime, and tobacco, and invites them to partake—which invitation is received with much pleasure. This being done they begin to jest with one another, some reclining, others seated, thus at times passing an entire day in friendly intercouse.

Civil Hierarchy of the Tagbanuas of Apurahuan and Inagahuan

Masicampo, chief of all the rancherias.

Panlima, local chief of a rancheria.

Maradia, noble and member of the council.

Orangcaya, noble and member of the council.

Satia, noble and member of the council.

Pangara, noble and member of the council.

Moladi, noble and member of the council.

Lacsama, a kind of administrator in whose house the nobles and plebeians of the tribe meet whenever they have important matters to consider.

Paracasa, a kind of constable or agent whose duty is to make known the orders of the chief of the tribe. The command in which it is necessary to unite for business or council is known as Suriguiden.

All the offices mentioned above are hereditary in the same family. In case of the incapacity of the presumptive heir the office passes to another person either of the same family or not, usually, however, one of the brothers succeeds the incapable heir, thus keeping the privileges of office always in the same family.

Government and Administration of Justice

The government of the tribe rests in the hands of the superior chief, or masicampo, and the nobles who constitute a Supreme Court. Each rancheria, however, is governed by its chief, or panlima, who together with the men of authority of the rancheria hear in the first instance the cases of little moment which occur within their jurisdiction. The decision of the chief is usually respected; although there

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have been cases in which the litigants, not satisfied with the sentence pronounced by their chief, appealed to the supreme tribunal at which presides the masicampo and from which there is no appeal. This chief and the nobles possess certain life privileges. They are not ostentatious and do not have the manner of the wise and high dignitaries of the Moros, whom it is not possible to approach and to whom it is not allowed to speak without kneeling, bowing the head, and kissing the feet scarcely daring to face the interlocutor. On the contrary the masicampo, when he has to decide a question, speaks gently to the defendant and complainant, commands them to be seated before him and the nobles who compose the court, listens attentively to the complaints of each one and after due consideration of the question, pronounces sentence in conformity with the nobles, the old men, and the plebeian class who are present.

The litigants receive the judgment with great humility and mildness worthy of their character.

The punishment, or penalty generally imposed upon the guilty, consists of fines and reimbursement known as bandi towards the injured party. This payment is made by giving to him a certain number of large plates of metal, known as talam, various kinds of musical instruments, all of metal, and some earthen jars of different shapes and sizes, the value of which is in proportion to the size. All these objects are admissible by the court in order to cover the fines of the accused.

Corporal punishment rarely takes place. This occurs only when the nature of the crime is such as not to admit of any other less mild and lenient. The chief of the tribes and those who are a part of the court endeavor as far as possible to lessen the criminal liability of the delinquent in order that as light a punishment as possible may be imposed upon him. If at times during the session of this court there be present in the rancheria a stranger of some importance the chief will invite him to take part in the council, giving him the power of speech and a vote and not infrequently will consult his opinion.

Crimes and Punishment

In this tribe are recognized only three classes of crime:

1. Incestuous marriage or union.
2. Murder.
3. Robbery.

The incestuous union of father and daughter, of son and mother, of brother and sister, and of first cousins is the most serious of all

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crimes and because of the general indignation of the tribe merits the severest punishment. Those guilty of incest are confined in a cage made of thorny reeds. To them is given a scant portion of food for a limited time. They are then taken to the sea, a discourse is given to the people who have gathered there, exhorting them to be particularly careful not to imitate so detestable and scandalous a crime as that perpetrated by these who in payment for their perversity are about to be cast into the depths of the sea from which they will never again return. The guilty are then hurled forth into the sea.

The crime of murder is punished with a fine or reimbursement not exceeding 500 bandi, the equivalent of 50 pesos. This fine is paid to the family of the deceased. If the murderer should not have sufficient means to pay the full amount of the fine, the family and relatives of the deceased have the right to avenge themselves upon the murderer or any of his relatives. This, however, very rarely occurs, for the relatives of the rancheria from which the murderer comes, in order to avoid so lamentable consequences in their home, contribute according to the resources of each, the amount imposed by the tribunal. In this case the delinquent becomes free of peril; but he is under obligation to pay to each of his countrymen the amount of the fine which they religiously lent to him. Usually a rich man will pay the fine for him with the condition that should the bandi, or its equivalent which the noble has lent to him, not be returned within a specified time, then shall the murderer and his posterity (lineal descent) be declared slaves.

Civil debts are also treated in this manner when the time designated by the creditor has elapsed more than once and the debtor has found no means to pay the debt.

In the case of the crime of murder it is to be noted that in the very same act of the assault or fight, the right of vengeance on the part of the relatives of the deceased is legal as long as the act has not been made known to some chief or maguerar and as long as the delinquent has not sought the protection of the authority. When once this is made public and has become a matter of the council, the right to revenge themselves by force perishes.

Regarding the crime of theft or robbery it is scarcely considered as such, but is held in the light of a minor offence. There exists among them no greater penalty than the restitution of the objects stolen, the author of the crime being called a thief and a person of bad conduct. Should he, however, repeat this fault twice or more

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then he shall be punished. Besides restoring the stolen effects to their true owner, he will suffer a heavy fine and even the lash. There always exists the danger that should the thief be surprised in the very act itself by the owner of the objects taken, then will the owner have the legal right to kill the thief, providing always that the person robbed can justify himself with proof of the imputed deed.

Another crime which is considered as a minor offence is adultery. Among us and according to the new law, adultery is a libelous offence, but among the people of this tribe this crime merits no such qualification, since the only punishment is a fine payable by the adulterer, and the restitution of double the quantity of "bandi" which the husband was obliged to pay at his marriage.

This is the case if the woman was very young when she married; but if it be her second marriage then the adulterer need only repay the sum given as the price of her marriage and in addition pay a fine which is determined by the council. In case of inability to pay then shall the woman be restored to the power of the legitimate husband, the abductor or adulterer suffering a light punishment which always is a fine (bandi). The amount imposed by the council and wronged husband being satisfactory, the new mates depart to some other place to spend their honeymoon, leaving the husband dispossessed but with his gains and bandi. If the divorced pair have any property acquired during their married life the tribunal or council decides that the same be divided into equal shares, each one taking his own. The children born of this marriage not only have the right in the participation of the property, but have the liberty to visit their parents at any time and to remain in the power of either one as though nothing scandalous had happened. If the guilty woman is easily moved by love and should desire her true husband and show earnest longing to return to him and he be willing to receive her, the matter can easily be arranged before the council of the tribe without any further procedure than the payment of the regular fine (bandi) and the restitution of the amount of bandi which the second husband had to pay. The result is that a woman may marry a number of men without any loss to her honor, though there are not lacking women who are faithful to their husbands even unto death.

This tribe recognizes a superior being known as Diwata or Mangindusa who is the creator of earth and of men. His dwelling is in the heavens known as Basadcatdibuat. There are two secondary

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gods named Angogro and Jaliaqued. The former dwells with Mangindusa the latter occupies "Basadcatyba" the lower heaven. Angogro receives the souls of those who in life did works of charity and meritorious deeds and who had abstained from committing enormous sins and detestable vices. These are placed in a magnificent abode where there are beautiful houses for them and where they hear naught but happy and melodious music. On the contrary Jaliaqued receives the souls of those who having led on this earth a life full of vices and evil deeds too numerous to mention die in mortal sin.

Among the Tagbanuas exists the belief that their god has reserved in Basadcatdibuat picturesque houses surrounded by beautiful gardens and fields prepared for the saints, who have the privilege of ascending and descending to the earth in order to cure the infirmities of their people and to remedy their adversities. For this reason whenever the babailan, the minister or representative on earth of Diwata, is called upon to cure some sickness or to implore the aid of Mangindusa to remedy the afflictions of the tribe such as epidemics, contagious diseases, famine, etc., he never fails to invoke the spirits of the dead who in life had been relatives of the sick. In his supplication he calls upon them by the names by which they had been known while on earth. Usually the babailan is the minister of Diwata Mangindusa and the practitioner of the tribe. The god Diwata is represented by a small bird known as saguay-saguay and which sings a very melodious song known as darait. For this reason, before commencing any work, be it a journey, a healing, a wedding, etc., they invoke the protection of Diwata by means of the small bird saguay-saguay; if, in the act of the invocation, the bird sings it is a sign that Diwata does not approve; in such case the undertaking will be discontinued until another day. If, on the contrary, the bird will not sing, the god then signifies his assent and approbation, thus permitting the undertaking to be carried into effect. When they depart from their houses they observe the same ceremony. If, while putting their feet on the earth the saguay-saguay sings or some one within the houses sneezes, they will return to the house and there remain a few minutes; after a little while, not without imploring Diwata Mangindusa that he liberate them from any danger, they resume their journey. They consider the song of the bird or the sneeze of one of the companions of the house as an omen foretelling perils which await them on the way or at the end of their journey.

The singing of a small lizard called by the Tagbanuas tarectec, in

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Cuyon secsec, and in Tagalo butiqui, is considered very sacred even more so than the sneezing of a person. When the tarectec is heard at the moment when some undertaking is begun such as a journey, a marriage, etc., all work ceases and nothing is done for some hours and even days.

FEASTS

This tribe celebrates certain feasts on the last three days of the last phase of the moon, or the 7th, 8th and 9th days of the new moon, and the 15th and 16th days of the full moon.

On these feast days any kind of work is allowable, save the tilling of the soil, or the planting of rice or any other plants necessary for the sustenance of life. There are other particular feasts celebrated by the rich, such as the chief of a rancheria and the masicampo, the chief of the tribe. These days are chosen as fancy dictates, always taking care not to select the days of special feasts. These feasts usually take place after the harvest of palay, especially if the yield has been abundant. Two or three months before the celebration of this feast, the family of the chief of the entertaining rancheria and the other rich families begin the preparation of the pangasi. Rice partly hulled is boiled and then allowed to cool on a petate of cane or woven bejuco. When it is thoroughly cooled it is taken up in the hands and mixed with a kind of yeast called tapay, which is made in the following manner:

Wild peppers, the leaf of the buyo, ginger, and the shoots of a certain species of bejuco known as wa-ag are placed proportionately in a mortar and beaten. When crushed this is taken out, put into a piece of linen cloth and squeezed. This liquid is the ferment and together with water is added to the flour made of rice, which had previously been made into a kind of wafer. Afterwards the whole mass is placed in large jars covered with banana leaves. It is allowed to ferment for a time and is not opened until the day of the feast. The longer it remains unopened, the stronger it becomes.

On the day previous to the feast, all the women of the rancheria hull the rice, prepare the dinner, and make the delicacies known as "amit." These tid-bits are made of powdered rice, or malagquit, kneaded with unripe plantanos or wild honey. In all this work none of the men take part unless some of them should have killed a wild boar. They quarter it but do not prepare the food. On the day of the feast the inhabitants of the rancheria and the guests from the neighboring rancherias abandon themselves to the eating of the foods prepared according to a prescribed mode until the setting of

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the sun. At night numerous candles of wax and pitch known as saleng are lit, while some of the children of both sexes will make piles of firewood in the yard and light them in order that the sudden blaze may assist to illuminate the interior of the house which as a rule is without walls.

Now the hour of music has arrived. The instruments consist of a certain number of babandiles, sabarangs, and one or two drums of wood, one end of which is covered with monkey skin. This class of drum known as guimbal differs much from ours, its barrel being irregular in form and very long, at times measuring one vara and the covered end being larger than the open one.

When all is ready, every one joins in the dancing and drinking of pangasi, which ceremony is begun by the nobles of the tribe.

The dances are as follows:

The calipandang is danced by one or more women swaying with handkerchiefs in their hands and moving their feet very little. About the women the men dance very rapidly with their hands on their backs as though manacled and forming the figure 8. As may be supposed, they tire very quickly and as the wearied ones withdraw, substitutes take their places until the music ceases.

The guemba-guemba is danced by various women with handkerchiefs in their hands which they wave to the beat of the music. About them are an indeterminate number of men who with hands joined encircle the women as a net, going and coming to the time of the music and their songs.

The tarec is a dance executed by one woman or one man dancing very rapidly, even more rapidly than in the calipandang. This is of a religious character since it is the one danced by the babailan (either man or woman) the representative of Diwata Mangindusa prior to the beginning of a cure for whoever may be sick of the tribe. This dance is performed whenever they wish to give or implore the protection of Diwata in order to foretell to the inhabitants of the rancheria or tribe the terrible effects of an epidemic or other evils that may destroy the town.

If this dance is executed by a man it is not called tarec but quendar.

The dance tagbac is executed by a man with his hands ascending and descending alternately above his head to the beat of the noisy music.

The tambol is danced by a woman holding in her hands the dried leaves of the balasbas (a species of palm) which she moves to the sound of the music. Three or four men dance about the woman.

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The sarumay is danced by one woman or one man according to the ability to perform this, the most rapid of all dances.

The tugatac and the taguepat are danced either by one woman or one man so slowly and softly that not even dancers themselves become over-heated.

In all the dances, the women always have the advantage; for the simple reason that they scarcely move their feet and hands; while the movements of the men, besides their hare-like leaps, are so rapid that to continue dancing for any length of time would make them breathless.

While drinking pangasi there is no distinction of position whatever. It is to be understood that this drink cannot be taken out of glasses or cocoanut vessels, but through four small tubes of cañabujo the size of a penholder or large lead pencil. These tubes are put into the jar and touch the interior cover which consists of spikes of palay that serve as a strainer.

After the tubes are withdrawn water is added to the contents of the jar. This operation is repeated as quickly as the water is drained off. Any tao of the tribe can lead the wife of the masicampo himself to the jar, sit with her and drink pangasi. During this ceremony which is usually done by a man and woman, their heads being covered by large handkerchiefs, the man has the privilege of kissing the woman and may be quite familiar. This is done according to a common and traditional custom. There is no jealousy evinced on the part of the husband unless the man should lead the woman to any part not within the house in which the feast is celebrated. Many times an invited noble will return to his house offended because his wife had not been taken by one of his friends to the side of the jar and there partaken of pangasi. Among the invited guests there are not wanting some, who in these diversions not possessing morality and courtesy, become drunk and commit barbarities, thus lacking the respect due to their equals and even the laws and customs of the tribe. When this occurs, the old men unite and sentence the transgressor with a punishment adequate to the circumstances. The guilty one is made a prisoner and is fastened to one of the posts of the house until he has recovered his reason and begged pardon for his crime. If this, however, is not merely a slight offence but takes upon itself the character of a serious crime, then the council on the day following the termination of the feast, will impose a heavy punishment, first securing the person of the transgressor in order that he may not escape.

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There is another feast more general and solemn, which is celebrated annually, and known as sagda. This feast occurs in January or February on any day of the moon not otherwise observed.

The day previous to that of the feast, all the families of the tribe without distinction of rank, previously notified by the chief of the rancheria who usually is babailan or the minister of Diwata and who officiates in this ceremony, prepare their food, each person of both sexes in proportion to his ability preparing a small quantity of rice. When all things are ready, the chief of the rancheria or officiating babailan will give the order to begin the departure to the place designated in which to celebrate the feast. This usually takes place in some beautiful part of the beach where the feast is held annually. If this feast takes place upon the beach it is known as "sagda," if on the contrary it is celebrated in the woods or near the seed fields it is called langbay.

"Langbay" is similar to "sagda"; but its celebration occurs in April or May after the palay has been planted.

When the people have come to the chosen place, the minister of Diwata performs the religious ceremonies with great attention on the part of the people. He will begin by giving thanks to Diwata Mangindusa for having preserved their lives, giving unto them a good harvest (if this has been so) and freeing them from contagious infirmities during the year which has just ended; afterwards he will ask that during the year just commencing Diwata Mangindusa may continue to dispense equal favors and benefits, that this year shall produce an abundance of bees, that it may be a happy one for the tribe, and that there may be a good harvest of palay and little sickness. These religious ceremonies of the Babailan being ended, he will then make a small raft of caña bujo which is adorned with streamers of the leaves of bori or balas bas, a species of palm. In each of the four corners of the raft a candle of wax is placed and lighted. The raft is taken to the water and upon it is placed a chicken, buyo, tobacco, cigarettes, each of every kind of dainties prepared by the women, and last of all each person, regardless of sex, places upon the raft a small quantity of rice, the poor giving a lapatan or one fourth of a chupa, the nobles and rich a greater quantity.

The small raft being laden with these articles the babailan will invoke the sacred name of Diwata Magindusa, and will pronounce in their dialect the following words:

"Turona balza at Diwata tabanen at idulong mo cay Mangindusa

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ya mga caranen, manoc, pagmama may buegas nga ipagbuis namen cania maya canimo ya manga saraquiten may musang mararaet, matudo lamang ya cagayenan; at cat-taun nga buegayen cami et magayen nga tiempo et putiocan may magayen nga panguma at ipa-alaid ya mararaet nga saraquiten," which translated means:

"Depart small raft to Diwata, bear to him the dainties, the buyo, and tobacco, the chicken and rice which we offer to him and may there go with them the sickness and evil, leaving only the good, that in this year he may give to us many bees, a good harvest of palay and that he may put away from us contagious diseases."

After the departure of the raft they drink pangasi, which is the favorite beverage of the tribe. An old man or the babailan officiating is the first one to break the covering of the drink, followed by the nobles and then the common people.

The feast as has been said, is of a religious character and very solemn. Neither the dance nor any other kind of play or diversion is permitted.

The second feast which they also celebrate with certain solemnity, the "Sangbay," takes place in the month of April or May, two or three weeks after the planting of palay, and which is known as "Tugda." If after the palay has been planted and the heavens deny its beneficiary rains for a time and there be sign of the lack of bees then the tribe gathers and determines upon a day on which the feast of "sangbay" shall take place. This being done, the women prepare the necessary things for the occasion. The day having arrived, they meet in a place designated by the babailan, which generally is a small woods near the rice fields. Hither are brought a pair of chickens with feet bound. Upon arrival the chickens are untied and the large joints cut in order to procure a flow of blood from the wounds. While this is being done the babailan recites the prayers. Presently a hut is constructed. This consists of four posts, the bottom being of woven cane. The structure is uncovered and unadorned. In this cobachito, or hut, the babailan deposits the offerings of the people, which are sweetmeats, buyo, bonga, lime, tobacco, rice, etc. After the ceremony the people return to their homes and enjoy the delicacies of the feast. There is permitted no kind of play or diversion save the drinking of pangasi, which continues through the whole night. I have had occasion to be present, many times, at these feasts having been previously invited by the chief and nobles of the tribe. I could not excuse myself, for to them it is an honor to be able to invite a stranger of some merit whom during the time they might meet in the rancheria.

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Manner of Seeking a Wife

When the father of a family sees that his son has arrived at a marriageable age he will call the son to him and tell him that he desires him to marry and asks whether there may be anyone whom he favors. If the son accedes to his father's wishes and designates a woman he desires, the entire family, including the relatives, unanimously begin to decide upon a day when they will visit the house of the intended bride to ask of her parents her hand in marriage. The day having been fixed, the family, according to its circumstances, will send to the family of the chosen one a ring of gold, silver, or copper, an unmistakable sign that that family begs the hand of the woman. The family betake themselves to the home of the sweetheart and there form a committee known as "al-log." The father of the man being accompanied by some old men of the rancheria will open the discussion; he will use endearing expressions that may find favor among those present. He will tell the reason that obliged them to come to the house. This object being already known, the question will then be discussed or the petition refused. In the first case they will unanimously decide the conditions of the wedding and the quantity of the "bandi" which the family of the bride desires, and finally the day of the celebration is chosen. In the second case they are obliged to give an explanation of the motive for the refusal, although this happens very seldom, yet if the father or family of the woman do not wish to accept the proposition of the aspirant, they can not keep possession of the ring which had been sent beforehand.

When the wedding day has arrived the family of the bridegroom and all the old people of the rancheria meet in the house of the bride, taking hither all the necessary articles for the celebration of the wedding such as pangasi, boiled rice, fish, delicacies, etc., etc. When all is ready the babailan will officiate. If, however, there be no babailan among them, an old man of the rancheria who possesses the friendship and confidence of the two families will act as a substitute. The officiating one having previously placed in a cup or small hole in the ground a certain amount of cocoanut oil, will turn his eyes to the heavens in a supplicating manner and will pronounce the following words of the ceremony in Tagbanua:

"Way ini ytao nga magasaua 'Darait' ipagpanauag canimo ay pa buegayan mo naga sira et magayen nga pag asaua at maruay nga panulos et mas que uno unong caquenan nira."

Being translated: "Here are those who are married 'Darait'

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unto thee we recommend them in order that thou givest to them a happy union and the facilities to hunt and to meet with those things which are necessary for their life, their prosperity, and their well being."

This being said, he will then place his thumb in the vessel containing the oil and will anoint with it the fore-finger of the groom, touching it from the end of the finger down to the pulse and saying the following words in Tagbanua: "Apiat magayen nga palad," which is to say, "May your good fortune ascend." Afterwards, placing the palm downwards, he will again anoint the same fore-finger, beginning at the pulse and thence to the tip, saying words very similar to the above and which signify "May your bad fortune descend." The bride is similarly anointed. After this ceremony the padrinos (best man and bridesmaid) of the newly wedded pair prepare two plates of boiled rice. Each one will make a ball of rice the size of a hen's egg and hand it to their respective proteges who receive it with great attention and presently exchange it with one another, so that the groom gives his portion of boiled rice to the bride who immediately gives hers in exchange.

When this has been done the wedding ceremony is completed. From this day the groom remains in the house of his father-in-law. He has no right to depart from it, not even to live independently with his wife in another house which they might build. He must always remain with his father-in-law. If the newly married pair are of the rich class and have prepared all that may be necessary for the feast, then, after the ceremony, the guests begin to dance, to eat and to drink pangasi; if, however, the wedded pair are poor, the dance and the feast are omitted.

Polygamy is permitted on the part of men. As has been said before, a man who is rich and who is able to take care of two or more wives is allowed to have them, but he is not permitted to marry them at one time, the marriages taking place one after the other. The first wife is the head of all the others, and they are obliged to assist her in all the work pertaining to the service of the husband and the house. In case of disrespect or disobedience on the part of any of the wives towards the first wife, it is incumbent upon the husband to give the needed reprimand or punishment to the one guilty of the misdemeanor.

As the reader may imagine, the husband, in spite of being a spouse to three or four women, nevertheless is not able to have them all with him at the same time. He is obliged to live with each one

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separately, always beginning with the first wife, then the second and so on to the last one. The children born of this kind of marriage have equal rights in the inheritance. Should the first wife remain childless she has the right to adopt any son or daughter of the other wives and whose rights in consequence are legitimate.

Concerning the Mode of Giving Names

When the children of the Tagbanuas are two or three years of age their names are given to them in the following manner:

The child is made to sleep during the day. When thus asleep it is suddenly awakened, being called by the name by which it is to be known. Usually this is the name of some tree, river, or place where the child was born. It may be the name of some animal or insect and there are not wanting those who bear Christian names.

In spite of the strict observances of the marriage ceremony, these prove no obstacles to a woman who may imagine herself in love with another man and desires to live with him, he only being required to pay the necessary amount of bandi.

The bandi varies according to the age of the woman. If she is young then the man will pay to the father-in-law the sum of 500 or 600 bandi, its equivalent being 50 or 60 pesos. Should, however, the groom be a poor man then only half of this amount is demanded. This same amount is also paid for the woman who is somewhat old.

Concerning the Wealth of the Tribe

The riches of this tribe consist of much palay and a great number of vessels of metal and vases, such as agongs, babandiles, sabarangs, salapas, langnay, plates, etc., including money, furniture, and property. He likewise is considered rich who has numerous servants, who, although they do not live with him in the same house, are obliged to follow him whenever he calls them to certain work of his and who are obliged to pay him a certain amount of money or bandi.

Slavery exists among the Tagbanuas. A noble or rich man because of some misfortune on the part of a poor man will pay for him some debt or pressing obligation such as a fine or bandi imposed by the tribunal of the tribe. For this reason, the unfortunate man and his posterity become slaves of the rich man unless by some extraordinary good luck the said slave or one of his descendants is able to pay the ransom of the slave with half the bandi. This is done with mutual accord. Although the word slavery has a terrible signification, it need not cause the reader to interpret it in its actual

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sense, for among the Tagbanuas slavery scarcely signifies anything in comparison with that of the Moros, where the slave is a being despised and where the masters are owners of the lives and properties of their slaves. On the contrary, the slaves of the Tagbanuas are like free men. In the majority of cases it is their privilege to obey or refuse to do the mandates of their masters. There have been cases of this kind in which the master desired a certain thing should be done and in which his slave answered that he did not feel so inclined.

I myself have frequently been present at scenes of a similar nature. For this reason, without the fear of being mistaken I would say the government of this people is patriarchial.

Of the Duties of the Babailan, His Double Function as the Minister and the Physician of the Tribe, and His Influence upon the People

The babailan of the rancheria, whether man or woman, is regarded as a sacred and privileged being, the representative of Diwata.

When some epidemic or contagious disease afflicts the people they hasten to the babailan and beg him to intercede with Diwata that he remove from their midst the evil which is assailing them. Then the people will congregate in a certain place designated by the babailan and to this place will take various gifts and perform the religious ceremony which has been previously described.

When a man, woman or child becomes ill the family of the patient will hasten to the babailan who is famous as a doctor. They will beseech him to do them the favor of curing the sick one. After having examined the patient he will command the musical instruments to be brought to the house. When the first hour of the night has come, skilled musicians will play upon these the sabag. To the sound of this the babailan, if a woman, will dance the tarec; if a man, the quendar. During the dance the babailan will attain a state of frenzy, while all about him are quiet, regarding the act with great attention and respect. When the dance is finished, the babailan being restored to a normal condition, will declare to the family of the sick the disease with which he is afflicted, the sickness, as they imagine, being attributed to witchcraft or some other gross superstition. As has been stated when discussing the religious rites, no manner of cure is begun before the invocation to the Diwata. The following morning the babailan will secretly prepare the medicines, usually the roots and leaves of trees.

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When everything is ready he will touch some empty metal vessel in order to produce sound, calling and beseeching the departed souls of the family of the patient to help him to cure the afflicted one. The medicine having been applied, the patient and the house in which he dwells is quarantined against those who are not of the family and who have no part in the quendar or tarec. The quarantine may be a matter of one or two weeks according to the prescription of the babailan. In order that no one may be able to feign ignorance, he will place upon the door of the house small leaves of trees which they recognize and close the entrances to the house with cords fastened to small posts. The dance is continued every night. There are other infirmities known as "pintas" among them which are attributed to witchcraft and which the babailan can not cure. These evils are cured by particular persons or soothsayers. The man takes a cow and measures it by means of his arm. Upon the right side of the cow he places a small ball of wax. Before he again measures the animal he asks this question:

"Who has given this infirmity to such an one?" If the ball has not moved from its place he will repeat the question.

"Was it Jack?" If, after the repetition of the act, the ball has moved or fallen, then it signifies that Jack is the author of the evil with which the sick man is afflicted and whom Jack will be obliged to cure, being severely threatened by the family of the afflicted one. Usually the blind credulity of this people will effect a cure. If the babailan cures the afflicted one, he will receive his customary fee, which usually consists of various objects of value, the number of which is mutually settled between him and the family. If the family are rich, they are accustomed to celebrate with a fiesta the successful restoration of health. If, on the contrary, the man dies because of his ailments, the babailan receives naught for his labor.

When a death occurs the entire family break forth into weeping; though the grief may be lessened by the advice of the babailan who encourages them to resign themselves to the will of Diwata. If the death be that of a rich noble, the family and the babailan will immediately spread abroad the sad news to all the people. Should there be any near relatives living in distant rancherias, notices are also sent to these and they are informed that the body will not be interred without their personal assistance. If the deceased be the masicampo, or superior chief himself not only are his own relatives invited who live in distant parts, but also all the local chiefs and nobles of all the rancherias under his command. During the long

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illness of the Masicampo Dimas of Inagahuan there assisted him different babailanes, but without any satisfactory results. On the day of his death the sad news was told throughout the town, circulars were sent to the local chiefs, to the dignitaries, and to all the other nobles of the rancherias of his command. The body remained in the house more than three days. Upon the arrival of the relatives the body was buried. Two days after his death his body was placed in a coffin known as lungon, which had been an old baroto and now served as a casket.

The death of this superior chief was communicated to the Spanish governor of this island, at that time Sr. Canga Arguellez, who later sanctioned and approved the nomination of the successor of the dead masicampo.

An hour after the death of a rich noble—especially if he be the superior chief of the tribe—the family and head men of the tribe are accustomed to fire a cannonade to announce the unfortunate event to the people, other cannons are also fired as the body is taken from the house and also when interred. At times, instead of placing the body in the graveyard, the family and head men will place it within a small hut constructed by the people as the last resting place for their chief. This house is placed without the habitation and is surrounded by a strong wooden fence in the manner of a stockade. The burial being finished, the family will place upon the grave objects which he in life had possessed and cherished, such as vessels of metal and crockery, jars, articles of clothing, and jewelry, both of gold and silver. Among this people exists the ancient custom of giving food to the departed spirits. For this reason, the family after having finished the burial, place upon the grave the necessary articles of food, also a pot, glass, a cocoanut cup, and bamboo canes which contain water, which according to their belief the departed spirit drinks whenever he becomes thirsty. For months, even a year, the family will continue to carry food to the grave. After a year has passed, provisions are taken annually.

In olden times and even until ten years ago, objects placed upon the graves were considered sacred. For this reason no Tagbanua ventured to take any of these things lest the departed soul would punish him with a terrible sickness and even at times kill him. But later contact with the whites caused them to value less this traditional custom, and now in order to prevent robbery the family, before placing their offerings upon the grave, bore the large jugs and vases and break the dishes, so that neither the spirit nor those who wish

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to rob can utilize them. The burial of the poor is very simple. The custom, however, of placing upon the graves certain objects and provisions is indispensable; and if in life the being had no more than one suit of wearing apparel and a few things, it is very necessary that these must go with him. Today these customs are fast disappearing. My frequent tradings and long residence with this people induce me to think that it would not be difficult to civilize and educate them. Many Tagbanuas of both sexes have proved this. In the barrio of Inagahuan are Tagbanuas whose mode of living and ability to speak Tagalo and Cuyono can scarcely be distinguished from those of the Christians themselves.

The only art worth mentioning is the weaving. The women weave the caña-bujo, bejuco, and a small fiber with which they make small baskets, and large and small tampipes, which are telescoped baskets and take the place of a valise or trunk. With bejuco they weave the wide petates which are known as paypay and used for palay and other domestic purposes. Of the small, fine fiber the women of the north make the cases for cigarettes, buyo, etc. The Tagbanuas and especially the Palawanos of the southern part of the island, weave of the leaf of the bori, pandan, bancuang, and balasan, petates of various colors, although they are not as beautiful as those woven by the Moros of Cagayan. The Palawanos of the south weave a petate of bejuco of the best quality, split in two and one side painted black. This weaving is known among them as biday among the Cuyonos and Tagalos as biray. This petate is valued among the Filipinos and is used in some places as a carpet, and among the Tagbanuas serves as a bed. The value of the petate varies according to its size and the quality of the bejuco. If it is bejuco of the first class, known as seca, each petate whose width is a meter will cost from fifty to sixty centavos; if it is of second class quality, known as bugtong, its price will be forty centavos.

The principal occupation of the men is to till the soil for the planting of palay, corn, camotes, plantain, and other tuberous rooted plants; to cut bejuco of different kinds especially that known as seca and which is much valued; to bring from the mountains almaciga, bees and wax, etc. All these articles are carried to the villages and sold at a very low price to the merchants who usually are Chinamen. But this is not the usual custom, for the Tagbanuas are very timid and seldom attempt to go to the villages and commercial centers to sell their effects. For this reason the trading is done by roving Christians and Moros of the south who exchange

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with them cloth, ornaments, etc., and in times of scarcity, rice at a price more or less dear. The Moros are more than usurers and oppressors in their trading transactions with the unfortunate Tagbanuas who are easily deceived. In order to realize a lucrative trade and to be assured of fabulous gains, the Moros begin to invite the friendship of the headmen and local chiefs of the rancherias, feigning sympathy and intimacy, bestowing upon them the title of sandugo, or brother in blood. In the majority of cases they will presently give to them a certain number of pieces of cloth, bolos to work the soil, cooking utensils, dishes, etc., in order that each chief may distribute them among his people, very seldom speaking aught of the price. When all these things have been distributed, they will demand for their payment wax, almaciga, bejucos and palay if it is the time of harvest. These things are demanded in large quantities and at an insignificant price. Besides this they will cheat the miserable Tagbanuas in their weights and measures which are generally very large. Even today if we desire proofs, we shall find in the southern part of the island weights which the Moros and Tagbanuas use in their transactions. They are so large that a pico of almaciga or wax on their scales would give them 250 pounds instead of 137½ pounds, which is the legal pico; and their gantas are so large that a cavan measured according to our standard would contain 31 or more gantas. This inequality of weights and measures on the same island to the detriment of the unfortunate Tagbanuas, merits especial attention and requires effective remedy on the part of the persons called by the law to regulate them. I lament that this is the case not only in the south, but it occurs in almost all of the towns and barrios of the island where the corruption of weights and measures in general is found in a greater or less degree. In this part, the weights are not so much marred as the measures, which are usually made of caña espina known as alupan or gantangan (ganta) and of the interior husk of the cocoanut known as pulacan (chupa) instead of making them of wood according to a fixed standard. The size of the pulacan varies. Some are large and of various denominations; such as the apatan equal to four chupas, lima-an, aneman, pitoan, and waloan, the last equal to our chupa which was a diminutive measure equivalent to an eighth part of a ganta.

As I have said before, the Moro will give to the local headman a certain number of articles for which he demands bejuco, almaciga, wax, palay, etc. If the debtor, a headman, is not able to pay the

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sum required upon this occasion his creditor will designate a time, usually a month, in which time he will return in person or send a representative to collect the debt, with this provision that in case the fixed time should have expired and the debtor is not able to pay then shall the amount be increased two fold. When the day has arrived and the debtor is not able to settle, the creditor will again fix a time and thus successively until the debt is finally paid. If in some of the visits of the creditor or his representative, he should be able to obtain some almaciga, wax, objects of metal, etc., whose amount would not cover the debt, not even the half, these objects would not be placed to the credit of the debtor but would only serve as a fine or the payment of the expenses of the voyage of the creditor in his going to and from the rancheria of the debtor. In case the days of grace have expired, and the debtor, notwithstanding his superhuman efforts, does not find possible means to liquidate the debt, then the creditor will declare him and his posterity slaves unless his fellow beings aid him to pay. In this case, the creditor can not refuse to accept the sum which they, for the sake of humanity, delivered. If the debtor be a headman or chief, he will not, because of his position and dignity, fall into slavery; but he is obliged to redeem himself by one or two of his own slaves according to mutual consent and the importance of the debt. The delivery of the slaves being made, this vexatious business is terminated and the creditor will return to his rancheria with the slaves thus obtained. The nobles or headmen for whom the slaves have been given are irresponsible for their escape. Should the slaves return to the homes from which they were taken, the creditor has the right to demand them at the hands of the local authorities who are obliged to send them back. In consequence of this irresponsibility the slave capturers are oftentimes deceived by the slaves who after being with them a few days manage to escape, hiding in some situation unknown and ignored by the slave owners. But there is no evil in this world, with the exception of death, that has no corresponding remedy, more or less efficacious, so the slave capturers, in order to prevent this escape which occurs so frequently, adopt very rigorous measures, keeping their slaves well guarded until they have the opportunity to give them to strangers in exchange for articles of commerce at a price more or less cheap. These strangers usually are the Moros from Cagayan de Joló who annually visited Palawan and with whom the Moro chiefs of these islands engaged in the slave trade. Many slaves, Tagbanuas and

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Palawanos of both sexes, were taken to Cagayan de Joló until the years 1899–1900, a time of misrule for the island in whose southern part the Moro dignitaries were owners of life and lands especially the obstinate and rebellious Salip Yasen of Culasian, afterwards taken to Alphonso XIII where he died. He was a powerful and warlike chief and recognized neither the Sultan Bataraza nor the Filipino Governor of the island. Finally he declared war against his own chief during the latter part of 1900, but without results. If I am not wrongly informed I think the incentive which provoked the hostility between these two Moro dignitaries, was the outcome of a slave trade.

Tagbanuas known as Palawanos

After the Apurahuanos who, as has been said before, are the most numerous, follow the Palawanos, a tribe inhabiting the southern part of Palawan and which name they have taken. They occupy the east and west coast, embracing the rancherias of Tigman, Calategas, Punta Separacion, Aramaysan, Paniquian, Tagasao, Lada, Ipolot, crossing the rancheria of Bono-bono celebrated as the official residence of the Sultan Bataraza; around the point of Bulilian crossing to the rancheria of Culasian also known as the chosen residence of Bataraza and in the interior of which lived the troublesome Datto Tumay. Here occurred the fight in March, 1904, under the command of our Governor, Captain Miller, to recover the 31 guns and some revolvers which had been stolen by the Moros from the 48th Company of Scouts in an expedition for geographical purposes. From this place the Palawanos inhabit the rancherias of Ira-an and Tagbuaya. From hence are the rancherias of Quinlugan, Paniquian, Alphonso XII, Malined, Buyata, Tumarbong, Ihuahig, Isugud and Aramayoan—all the rancherias on the western coast being occupied by Palawanes and Moros. The Tagbanuas Palawanos, properly speaking, differ from the Apurahuanos only in dialect, in some of their minor customs, and in the manner of eating; otherwise, these two tribes are almost identical save in the use of writing. This tribe has no mark or known characters, for this reason they have adopted the Arabic and Tagbanua characters. The Islamites use the Arabic character; those influenced by the Apurahuanos use their characters.

The Civil Hierarchy of the Palawanos

Datto, Moro authority, a kind of Governor of the district, which embraces a certain number of rancherias.

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The panlima is the chief of a rancheria.

The maradia is next to the panlima.

The orangcaya, sattia, and tumangong, are councilors of a rancheria.

The seat of government is in the town. The administration of justice is in the hand of the tribunal, which is composed of the panlima and the dignitaries above mentioned. Though in case of a slight fault which may not be considered among them as a crime, each chief is able to pronounce judgment, the sentence of which is usually respected by all. In case of an appeal, it must be taken to the tribunal where resides the datto who governs the rancheria. If, notwithstanding his decision, the parties are not yet satisfied, which is very seldom, they can go to the sultan of Bono-bono, where presides the supreme tribunal of the Moros and Palawanos. Against the sentence of the sultan there is no further recourse, unless this ruler, in the light of circumstances, should take this to be a penal crime; in which case the accused is sent to the superior authority of the island with the previous and detailed account of the act, to which justice shall be done. This occurred during the Spanish dominion at which time Muhamad Alon Narrasib (of grateful memory) governed the southern part of Palawan inhabited by the Moros and Tagbanuas Palawanos. Because of his faithfulness and loyalty to the established government he became the worthy and celebrated sultan of Jolo, afterwards of Bono-bono. He was the father of Datto Bataraza above mentioned.

The Crimes of the Palawanos and their Punishment

As I have said before, the two tribes differ only in their dialect and in some customs. The punishment which is imposed upon those guilty of crime and minor offenses is exactly the same as those of the Apurahuanos with the exception of those of adultery and murder. The family of the murdered demand an indemnity, which varies according to the social position of the one who was killed. If he belonged to the rich class the murderer has to pay to the family of the dead man 100 pesos; if he was poor 40 pesos is sufficient. Among the Palawanos there is not tolerated the abduction of a married woman as is the case among the Apurahuanos. The crime of adultery is not only held by them as a dishonest and scandalous vice, but is punished very severely. And not only has the offended husband the right to kill, but whatever relative should thus surprise them. For this reason, among the women of the

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Palawanos is found more faithfulness than in the other tribes. The customs among the Palawanos themselves vary. The inhabitants of the rancherias where the Moros reside and from whom they receive their influence follow and adopt the customs and usages of the Moros, thus eating no pork and receiving the Moro baptism known as Islam; while those inhabiting the interior and the mountains adopt the customs of the Tagbanuas with a slight difference. The Palawanos pay a kind of tribute to the family of the ruling datto at Bono-bono, which usually consists of rice, wax, etc., in quantities determined by the ruling datto and the respective dattos of the rancheria.

This tribe knows only two gods, whose names are the same as those of the Apurahuanos. Their ideas of the life after death are also the same. The little bird, saguay-saguay, the messenger of Diwata, is known to them as sapued. The singing of this bird, the peculiar sound of the lizard, and the sneezing of a person have the same significance.

The Palawanos who are Islamites and who live in the southern part of the rancherias inhabited by Moros, being influenced by these, observe the fiestas of the Moros; while those living in the interior observe those of the Apurahuanos. But they always observe two days in common, the first and fifteenth of the moon. There is only one annual fiesta which they hold with much solemnity and which is known as Ronsay. This celebration takes place on the beach or some other spot made known beforehand. It is observed one or two days before the soil is broken for the seed, which usually occurs in December. The object of this fiesta is to thank Diwata for the good harvest and the favors received during the now ending year; and to ask him to give to them his protection and favors during the coming year. The observance is the same as that of the Apurahuanos, save that among the Palawanos it is permitted to take part in all the games and the dances.

The Islamite Palawanos have their children baptized by the Moro priest who is known as Imam. Those who dwell in the mountains observe the same ceremonies as the Apurahuanos.

Those who are not influenced by the Moros are almost identical in their manners and customs of the Apurahuanos. Their manner of receiving strangers and persons of importance is very much the same, with this slight difference, that in courtesy they are somewhat rude and gruff, and they lack in hospitality.

The Palawanos of the extreme south are very unsociable and not communicative with strangers, owing no doubt to their peculiar

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dialect. These Palawanos feed upon wild animals, vermin of the forest, worms and grasses, centipedes, snakes, monkeys, etc.

When any of these become ill the babailan cures them. Should a person die whose infirmity the babailan could not cure, the cause is attributed to witchcraft. The body of the dead is bathed and then wound from head to foot with one or more pieces of white cloth. If the deceased was rich, his body will be placed in a coffin; if poor, in a basket of caña espino very similar to a chicken coop. There is no ceremony observed at the grave, save that articles of food are taken there and upon it are placed the various articles of more or less value which had belonged to the man in life.

The Islamite Palawanos observe the sambayang of the Moros, which corresponds with our novenary. If the man was rich, during this period of vigil large gifts are distributed consisting of money or cloths, according to the pecuniary ability of the family. This gift is obligatory on their part and thus if any child or relative of a moderately rich Palawano dies, these compulsory expenses very often reduce him to poverty.

The riches of the Palawanos consist in metal dishes, rice, money, servants, and slaves.

Although the Islamite Palawanos are on good terms with the Moros, this is not the case with the Palawanos of the interior and the mountains. Between these and the Moros there is constant warfare. No Moro, alone, is able to penetrate the woods or to cross the line which separates the rancheria from the territory occupied by the mountaineers, without danger of being killed. This is done to avenge the disappearance of their countrymen who had fallen victims to the excessive oppression of the Moros and who were either killed or were made slaves, being taken away to distant places and there sold. The mountain Palawanos, for the same reason, never crossed into the territories of the Moros.

I have already spoken of the industry of the non-Christian tribes including the Palawanos. But the Palawanos of the coast, notwithstanding the timidity of their character, are the only ones who come here after the harvest to sell their products of rice and petates of pandan and bejuco known as viray. They are always accompanied by certain Moro friends. I have known no other kind of commerce among this people and I have never seen one Moro who worked the soil in order to plant the seeds, not even a camote or plantain, much less palay. The exception to this were two brothers, who had lived with Christians ten years and who in the time of the Spaniards had been held as prisoners.

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The arms of the Palawanos are the kris and some of those who live along the beach possess guns. Those who dwell in the mountains use the blow-gun, which is a hollow bamboo joint about two meters in length. The darts which are used are small sticks in the form of quills made of cane, the point of which is poisoned with a substance which they make, in color like pitch. The activity of the poison is so terrible that a man or animal wounded by the dart will die within ten minutes. The unfortunate being scarcely moving two or three paces will fall to the earth, his vision fades, he will vomit severely, consciousness leaves him, and amid cold perspiration he will expire without uttering a word. Upon one occasion I found myself in the territory of the Batacs in the barrio of Caruray and there witnessed a case of poisoning of this nature. It was the result of play. One of the men of the tribe who was very skilled in the management of the blow-gun had one brought to him. Without examining it in the least to see whether it contained a dart, he blew into it with all the force of his lungs. But behold, the jest proved dear, for without more ado there came out of the mouth of the blow-gun a dart which penetrated the calf of a leg, causing the person to fall immediately to the ground. As soon as the one who handled the blow-gun saw the magnitude of the misfortune he hastened to the man and took out the dart. He then fell upon his knees and began to suck the wound, so that the poison should not reach the heart; at the same time an old man hastened to the woods to procure a certain kind of medicine. Having drawn out sufficient of the blood, whose color appeared black, and in the meanwhile the old man having not yet returned, they applied to the wound a poultice whose principal ingredient was lemon, causing the wounded man to partake of it. They assured me this remedy to be sufficient to counteract the poison; but that the medicine which the old man sought is more effective. He returned with roots of trees which were unknown to me. These he applied to the wound and shortly afterwards the unfortunate man revived and was as well as ever. In my dealings with the Batacs I have handled this weapon against wild beasts and I am convinced from my own experience that this poison is more fatal to animals than to man, for a lizard being wounded died immediately in the midst of terrible convulsions. A monkey fared the same. This inoffensive animal was hanging to a branch of a tree when it was wounded, but immediately fell and was dead when it reached the earth. The animals killed in this way are not

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flung away. The poison does not hinder their being eaten by the Batacs and mountaineer Palawanos, who with a knife or bolo cut away from the body the part injured by the dart.

Weights and Measures used by the Palawanos and Apurahuanos

The steelyard consists of a piece of wood the size of a cane about three feet in length, some being longer, others shorter. This is suspended from a string which is fastened a fourth of the distance from the end of the yard.

The rod is marked with points and lines which indicate the weight. The points indicate the half cate and the long strokes the cate. This weight, which is known among them as timbangan or chinantanan, is provided with a counterweight of stone, iron, or lead the same as ours. Each cate weighs ten pounds. Ten cates are equivalent to a chinantan and two chinantans are equivalent to a pico, which is equivalent to 200 libras according to our weight. The timbangan is used to measure the almaciga and the bejuco. This scale varies in size. The smaller one is used very frequently to measure the beeswax, and this unit of weight is equivalent to five pounds and sometimes seven.

A cavan contains twenty-five gantas which gantas are much larger than ours. In place of a bag they use the bayong, which is similar to petate. The liquid measures are the tabo a cup made out of cocoanut shell, the gori and the bottle. The bottle is used to measure the honey which they sell to the Christians. In times of scarcity a bottle is worth twenty centavos.

For unbroken land which is to be sold for planting the unit of measure is the braza de bolo, whose operation is as follows: A man places himself in a standing position. On his right hand is hanging a bolo; in his left hand is a caña bojo, whose end touches the earth at his extreme left. The right hand being raised until the bolo is in a vertical position, marks the distance where the point of the bolo touches the caña bojo. A piece of land 20 "brazas de bolo" square is equivalent among the Palawanos to ten gantas of palay, payable in advance. Another method of buying land is to pay four cavans of palay for land which has been broken and prepared and which may contain 30 gantas of seed, the Tagbanua ganta being larger than ours. This is the account of the purchaser for all the expenses incurred, including the work from the planting of seed until the harvest.

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These people do not know the meter, the yard, nor any other measures. They are equally as ignorant of chronological measurement. No one knows his age nor can tell the time or year in which he was born. The only mark of time they know is the month Bulan, which they reckon from the first night of the new moon, or "Lati" until the last phase of the moon. They calculate the ages of their children by the harvests which annually occur in some other place. For this reason if we should ask a father the age of his son, he would begin to count from the time when a certain seed planting took place when his child had been born. Should the child be more than ten years of age the computation would be impossible to make exactly; for these people have no list of their consecutive harvests. And thus the only answer is that they are not accustomed to count the years.

The Queneys

There is another tribe in the south, dwelling in the mountains of Lad-da, Ipulot, Buligay, and near Bono-bono. They also inhabit the mountains of Culasian on the opposite coast. They are known by the Palawanos as Queney, but of them little information is available, acquired from Palawanos and Apurahuanos. According to them this tribe differs much from them in custom and dialect. They do not like to trade with any of the tribes, being afraid of catarrh. Should any one of them become afflicted with this sickness they are sent away to solitary places. They live apart in the mountains. They form neither rancheria nor settlements. They have no chief. Their government is patriarchal. They build no houses, living in rude huts and the trunks of large trees. They clothe themselves with the bark of the antipolo tree similar to the Batacs. They eat vermin and wild beasts, the most favored being the "pantut." They are very warlike and arrogant. Although they have no chief of their own, there are some who, having received the influence of the mountain Palawanos with whom they trade with much distrust, recognize the authority of the panlima, but with much indifference, though they accept his commands. Some of the trading Palawanos have ventured with merchandise, bolos, hatchets, cooking vessels, etc., to enter the mountains inhabited by the Queneys. Never do they permit traders to approach their dwelling places, keeping them at quite a distance. The head of the family will make a sanitary inspection of the traders and if they have no catarrh they may approach. This inspection is done at a safe distance so that

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the voices are heard by all. The chief will then ask them what they desire in these parts, to which they reply that they have come with merchandise with the object of selling it. This news the chief bears to his family, who, being hidden, make known what they want, and the chief will return to the trading place. If the old man and his family have no mistrust, they will invite the traders to come forward; if, however, they are mistrustful, the transaction takes place in the original place in the following manner. The trading is done in a loud voice and at quite a distance. The head of the family will name the articles he needs and requests that they be placed in a designated spot. He will then go there and take away the articles replacing them with almaciga, beeswax and bejuco in quantities according to their mode of thinking; for they have no weights neither do they understand such operations. As can be imagined the traders have the best of the bargain. Being genuine mountain people, very few of them know the coasts of the sea, to which they come only to procure the salt. And even then they select a spot unfrequented by people. It is said by persons who have had occasion to observe this tribe that when the day arrives to go to the shore for water from which to procure salt, this being done annually, they first of all like thirsty beasts, drink to satiety, because in their homes salt is treasured as we value gold and for this reason is the most important article of trade between the Queneys and the Palawanos. This tribe is more cruel than the mountain Palawanos. They are most inhospitable, suspicious, and distrustful in the fullest meaning of the word. They are exceedingly dirty. They are charred from their breech cloths to the face, by their constant lying during the night close to the fire, and the dirt serves as a mantle to protect them from the cold and humidity. The greater part of the tribe inhabits the caves of the mountain.

Because of the nomadic condition of this tribe and the difficulty of acquiring exact information, little is known of their form of government, save that it is patriarchal. The information given by the Palawanos who have met the Queneys at close range, is more or less truthful, and according to their opinion, it is not venturesome to say that the Queneys not only have no idea of government, but that neither do they have a system of administering justice similar to that of the Tagbanuas and Palawanos. In the same manner we believe that the Queneys have no idea of Diwata nor of a life beyond the grave; for we have no knowledge that they practice any of the religious rites known to the Apurahuanos and Palawanos.

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The Queneys are of normal stature and delicate in appearance. Their hair is black and kinky like that of the Batacs. They traverse the dense woods easily and their foot-steps leave no trail. Never are they seen first. They always are first to notice those who enter their woods, especially if they be strangers whom they watch in ambush, hiding themselves in the trunks of large trees. Seeing the strangers at a great distance, they are at once ready to surprise them with the blow-gun. Calling out in a mournful and fearful voice they ask the following questions:

"Who are you?" "Whence do you come?" "What is your name?" "What has brought you hither?" etc., ending with the important question: "Have you catarrh or any other sickness?" The people being thus questioned answer them, telling their names, their objects, and whether or no they have catarrh or any contagious disease. In the latter case they are immediately expelled from those parts, and are told with warning that in the future they should refrain from making another visit.

We know nothing of their labor save that they cut the bejuco and gather the almaciga and beeswax to exchange for cooking untensils, bolos, etc. They cultivate the soil for their seed planting to such a limited extent that its products scarcely supply their necessities even during the first few days of the harvest. They also plant very few tubers.

The Queneys use no arms save the blow-gun, in which use they are very skilled. It was from them that the Palawanos learned to use this weapon; and according to the Palawanos it is the Queneys who make the poisonous substance with which they cover the ends of the darts. This is all the present knowledge we have of this nomadic tribe and of their conditions and territory which has been little explored even by their friends the Palawanos.

The Batacs

There is another tribe which occupies the mountains of north Luzon known as the "Batacs." This tribe lives in the mountains of Babuyan, Tarabanan, Langugan, Caruray, Quinaratan, Buhayan and a small part of the barrio of Barbacan; on the west coast they live in the mountains of Caruray.

The Batacs are usually smaller than the other Filipinos. They are well formed and agile. The nose is generally of better shape. The hair is crisp and curly, less black and less ugly than the negroes of the African coast. The Batacs inhabit the interior almost reach-

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ing to the high mountains where begin their rice fields, so small that the products thereof furnish scarcely enough food during the first days of the harvest. They cover their loins with the bark of the antipolo, namuan and inbalud. This garment known as bahag is made into different forms, some being painted red and yellow. During the time of harvest, they live on rice; in the time of scarcity they eat roots, the fruits of the forest, wild boar, squirrel, and vermin. Their chosen delicacy is wild honey and a preparation made of this and the larvæ of the bees, boiled like rice. They hunt the wild boar and birds by means of the arrow and the blow-gun, which they handle with almost incredible skill and accuracy. They are always followed by their wives who with hair unbound, very curly and disarranged, carry their children suspended from their necks in a cloth made of the bark of trees and with the four corners tied together. This weight rests upon the back or is sustained at the breast. Apart from this, they carry small baskets made of woven cane and which contain the articles needed for the journey. The men bear naught but the bow and arrow, the blow-gun, a lance if there are any, and a tube made of cane. This is suspended from the waist by a piece of bamboo or string. Within the tube or ranque are steel, flint, and fuse; the fuse being the shavings of bamboo and the beaten bark of palm. With this apparatus they make fire which they call santican.

Twenty-five or thirty years ago the Batacs were nomads. They formed no rancherias and slept wherever night overtook them. Today, thanks to their frequent trading with the Christian and semi-civilized Tagbanuas, their savageness has not only moderated but has practically disappeared. Now they have commercial relations with strangers and admit them with hospitality and confidence. Among this number they chose one who inspired them with confidence and gave them more protection. The Batacs gave to him the title of agalen, which means friend. He it is who provides all they need, such as bolos, cooking utensils, etc., including rice in times of scarcity; in exchange for these articles bringing to him almaciga, bejuco and wax. The Batacs differ slightly from the Queneys. They eat the same kinds of food with the exception of worms, centipedes, lizards, etc. With the exception of the Batacs known as Buhayane, who inhabit the mountains about Malcampo and Umalad, they do not eat snakes and inguanas. The Buhayanes are very warlike and cruel towards their enemies as demonstrated during the Jolo piracy which reigned in this island.

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Their daring is well nigh incredible. If any one of their number should encounter in a cave or in the hollow of a large tree a large snake known as biay he will notify his companions and ten or more of these will hasten to the place. One of them with a loop made of bejuco will enter the lair of the reptile in order to bind him. Presently by the force of the throw they will cause the snake to come forth. If in spite of this operation it will not come forth, then they will make a fire. When the reptile appears he is cut into pieces and each person receives the part which he has touched.

The Batacs are very dirty and strangers to the bath. Their bodies exhale a fearful odor. Their skin is very much charred owing to the fact that they constantly lie near the fire, which protects them from the cold. They live in small huts made of palms. They form no rancherias like the Tagbanuas, but dwell in families in the mountains and the interior of the woods. The women give birth without any aid. When the appointed time has come the husband constructs a small hut, and the woman is placed therein in a horizontal position. A piece of wood is her pillow and a petate is placed under her body extending from the head to the waist. After the child is born the woman will arise without being aided. Having taken her medicines, which consist of certain roots, and leaving the child unbandaged and uncovered, she will go to the nearest river and bathe. She will return with a vessel of water and bathe the newly born child, and is now ready to do all kinds of work including the hulling of rice. After the birth of the child, the mother always has a vessel containing water with which she bathes the child whenever it cries, emptying the contents upon the head of the child until its crying ceases. This manner of birth and care of the child is also observed among the Apurahuanos.

The children are baptized by the fathers without ceremony, some immediately after being born, others after a period of two years or more, according to the desire of the parents. Their names usually are those of animals, trees, rivers, places or spots in which they were born; and not infrequently they bear the names of Christians, such as some of the Batacs of Caruray known as Elicon, Lorenso, Victorio, etc., owing no doubt to Christian influence. If a child has been born near a certain river it will bear the name of that river.

When a young man desires to take a wife he will ask permission of his father. This request being granted, he will take espousal gifts consisting of bracelets and rings of yellow metal, turtle, and carabao horn to the house of his intended bride and give them to her

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parents, who receive them with much gratification. The future husband may or may not be accompanied by his friends. He will remain at the house of his sweetheart for a few hours. This now signifies that he has claims to the girl. The father will then signify a day when the young man may formally ask for her hand, and the day having arrived the families will meet in her house and decide upon the time of marriage, which usually takes place two or three days afterwards. The marriage ceremony of the Batacs is the same as that of the Apurahuanos. After the completion of the ceremony the families and invited guests enjoy the feast which consists of drinking pangasi and eating wild boar, monkey, etc. They do not care for the dance. When partly drunk they enjoy singing the tud-tud or dagoy, which the Apurahuanos also know. There are some mountain Batacs who dance the "talutad." A man dances this very rapidly and to the sound of the drum. The song of the tud-tud is a tale of the ancient deeds and history of certain men and women who were much honored. It also may be the story of dear ones who have died.

Polygamy is permitted to both sexes. During the six years that I lived in Caruray at a place near the Batacs, divorce and the abduction of a woman were rarely known.

The most common diseases among them are skin eruptions, such as itch and tetter, tumors, and malarial fever and catarrh. This last is the most dreaded and common disease among them owing to the rough weather and to the heat. The tumorous affection is the most dangerous and causes much loss; yet they take scarcely any care because of it, although it is contagious. The children who fortunately have not been attacked by this disease are inoculated with it by their parents who according to their mode of reasoning, think it better to be thus afflicted while young; for to be touched by it in old age causes the person to suffer more intensely. For this reason 60 per cent. or more of the people are afflicted by this disease. The Batacs of the mountains have no experience whatever and they never take into consideration the terrible effects of this sickness which decimates them and makes them useless. For the persons so afflicted, not only lose their physical strength, but in the majority of cases become utterly helpless. Their joints become weak, and after a little while ulcers appear. I have known various Batacs afflicted with this evil. Their aspect was thin and nauseating. Afterwards in spite of the spreading of the wounds which broke forth on all parts of the body, especially in the lips, and

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which caused the man thus afflicted to be more hideous than Dante's Demon, these sores disappeared without the use of medicine. The scars remained. Those who have this disease can easily be recognized by the black scars about the mouth which very frequently have caused the natural size to become smaller. The joints of the fingers and knees remain swollen and the limbs weak.

The diseases which cause horror and fear are the measles and small-pox. Whenever these contagious diseases invade their homes they flee to the mountains, each family or barangay living by itself. Neither will they return until the epidemic has completely disappeared. It would be very dangerous for any person to encounter them during this period of roving. During this time they communicate with no one neither do they any kind of work but hunt wild animals, fruits and bees for their daily food. This tribe can suffer hunger for a long time. In time of scarcity they are accustomed to go without food for a day or more and consequently they are very thin and weak. On the other hand, during the harvest they eat day and night, resting but for a short interval. They always have on hand a large quantity of boiled rice prepared by the women and they eat whenever hunger demands. To prepare the soil for the planting of rice and to cut the large trees is the work of the men. The women sow and gather the harvest, hull the rice and do all the work pertaining to the house.

Although the Batacs of the west at Caruray do not dance, those of the east dance the sarunkay, a very slow movement executed by a man to the sound of the sabagan, the agun, babandel and guimbal. The agun is a piece of soft wood with the bark taken off. It is ten feet in length, more or less, and twenty-five or thirty centimeters in circumference. This wood known as li-it hangs in any part of the house, being held by cords fastened at both ends. The instrument is played by a woman by means of small pieces of wood shaped like drumsticks. Their other dances are the same as those of the Apurahuanos. The women do not take part in any of these dances, it is their part to play the instruments. At the feast of sangbay men and women dance.

The Batacs of the mountains recognize the same gods as the Apurahuanos. It is the duty of Diwata to provide for men and to reward them according to their good deeds. Angogro dwells in Basad, at the entrance of which is an iron bar and which the souls must pass. Whether a soul is destined to die or not is known by the ascending or descending of the bar known as "bari-bari." When

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a soul presents itself at the entrance of Basad, there is found at the door the god Angogro, who, when his eyes are open, is asleep and when his eyes are closed is awake. The soul about to enter will receive freedom and is permitted to return to earth, if the bar obstructs the entrance; on the contrary if the bar ascends, it signifies that all hope to return to life has perished. The soul that enters Basad is examined by Angogro regarding the life he led upon earth. He is warned to tell the truth; for before him Angogro it is in vain to lie, since naught is hidden from him. The soul thus summoned to the judgment, will begin to extol his virtues and good works and end by telling his evil deeds. The examination being ended the soul is sent to Diwata who decides the case. If the result is good the soul enters Lampanag, a beautiful abode; if on the contrary the soul is guilty he is thrust into the depths of Basal where in large caldrons are fire and boiling water.

The Batacs of Caruray also have certain other saints. Siabuanan is a saint who is a demi-god. It is his duty to aid Angogro to receive the souls and to make known to him whether the soul being a male, had known how to cut trees, how to handle the bow and the blow-gun with skill and accuracy and whether he fulfilled his duties with honor. If the answer be yes, then the soul is permitted to present himself before Diwata unharmed; if, on the contrary, the answer be no, then Siabuanan punishes him, hitting his fingers with a small hammer with which he is armed. The soul that had been a woman is also questioned concerning her private life and the ordinary duties pertaining to her sex, such as the weaving of petates, tampipes of caña bojo, the small baskets for tobacco or buyo, the making of cloth of the bark of trees, etc., and finally their hands are examined in order to note the calloused spots. If the examination be favorable the soul enters Lampanag; if, on the contrary, their lives have been lazy and their hands are not calloused, then they are also punished by Siabuanan.

The other saints are Bancacalo, Paraen, and Buenguelen (the last two are married) and Baybayanen. These saints are of great strength. Their deeds of valor are innumerable. In remote times when piracy reigned all over the island, the people were saved on many occasions from capture and slavery. Because of this, terror possessed the minds of the Moro pirates, a feeling which still continues among them; for no Moro ventures to attack the mountain Batacs, especially the Tandolanos of whom we will speak later.

This tribe celebrates no fiestas with the exception of that of

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sangbay, the same as is observed by the Apurahuanos. This takes place in April. The celebration of the fiesta is the same as by the Apurahuanos with the difference that all classes of diversions and dancing are permitted and in them men, women, and children participate. Neither do they observe the sacrifice of the chicken as the Apurahuanos do. The Batacs, however, construct two little huts in imitation of a house. In the one house is placed palay, in the other are imitation houses of bees made of the leaves of the balasbas or species of palm. The babailan will then recite the prayers and earnestly beseech Diwata that he give to the tribe a year of much palay and bees. The two little houses signify that in this year Diwata give them an abundance of palay that shall fill their houses and that the woods be filled with bees. The ceremonies being completed, they will eat, drink, and dance. They eat heartily very much like beasts. The celebration of this feast takes place in the solitary places of the woods, distant from the beach two or three kilometers.

When one of the people becomes ill the babailan officiates in the same manner as among the Apurahuanos. When a quarantine is established, instead of placing mecate, or ropes at the entrances to the house, a piece of wood known as langaday or gaalo an instrument used to hull rice, is placed there. When a man dies, especially if it be the chief of the tribe, the news is told to all the people. Every one is obliged to break forth into weeping even including visiting strangers. When the head of a family or some person of distinction dies special messengers are sent to all the places. When the messengers arrive, they do not speak, but they take the hand of the head of the family and either kiss it or press it. The family then know the dire misfortune and accompany the messenger to his home. Surrounding the body of the dead person, they weep, speaking amid their lamentations of the dead man's powers, his influence among the tribe, his meritorious deeds, etc., which custom, among us, would augment the grief of a family instead of allaying it. The body of the dead is permitted to remain in the house for an indefinite time, according to the wish of the family and the social position of the man. The body is buried without any ceremony. In the grave are placed articles of clothing and food and this act is repeated from time to time.

Moreover there is another custom which is very peculiar and equally ridiculous. Three days after the burial of the body, every person who assisted at the interment is obliged to return to the

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grave and place upon it a stone in order that, according to their belief, the soul may be able to enter Lampanag. Should this practice be neglected it would prevent the soul from entering paradise and oblige him to wander about in the lonely places of the forests and mountains.

The Batacs lack the government of the tribes of the south. The settlement is governed by a capitan who is chosen either by the chief of the province or by the local chiefs of the barrios. The form of government is really patriarchal. The authority is in the hands of an old man, chosen because of his superior merits and who, together with the old men of the tribe, dispenses justice according to their laws and customs. The decisions thus granted are received with much humility.

Murder is punished with death, if the murderer is not able to pay the family of the murdered one a certain quantity of bandi determined by a tribunal of the old men, the quantity being equivalent to ten or fifteen pesos. This being paid, the business is settled.

The family of the murdered has the right to avenge itself by killing the assassin, provided, however, that the news of the deed has not yet been made known to the old men.

Robbery or theft of whatever kind is punished by means of the lash, provided that the guilt of the person is proved, though should the thief be caught in the very act, the owner has the right to kill him.

The crime of adultery or the abduction of a married woman is considered very grave and is punishable with a heavy fine. Should the husband surprise the guilty ones he has the right to kill them.

A man is considered rich if he has sufficient rice to supply his needs for one year, if he has a large number of vessels and plates, bracelets of metal and shell, and much clothing.

The Batacs of the mountains engage neither in agriculture nor in commerce. They show no kind of interest or love for planting palay which is their principal food; neither do they care to plant the tubers which are a substitute for rice in times of scarcity. For this reason there is much misery when there is no harvest. Scarcely one family among them will plant in their badly prepared soil 6 gantas of palay, and seed fields are very rare that contain 25 gantas of seed. It is only the chiefs who possess these and this is due to the fact that all their subjects are obliged to help them to break the soil, to plant, and to harvest. Among the Batacs exists

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the custom of helping one another in planting and gathering. The first one among them whose harvest is ready is obliged to notify the others. They will come with their respective families to assist at the harvest, each one taking to his own dwelling that which he has been able to cut. This generous custom very often causes the owner of the small harvest to have little palay left for himself, though of course there remains to him the right to aid others in their harvests, that portion being his which he and his family cut. During the harvest time there is no work done but to gather, hull, and boil the rice, which is all done by the women. As has been said, there is always on hand a large quantity of boiled rice which is eaten at any time and chiefly by the men who at this time are found lying in their houses day after day and only rise to eat or to go to the hunt.

These people are skilled in the hunt of wild boar. They use various kinds of traps. The garet is somewhat like a small house twelve or more feet in height and is placed in the top of a tree which yields a fruit pleasing to the wild boars. There enter into this house one or two men with bows and arrows who await the approach of the boars which usually come in numbers. Upon the arrival of the animals the two men discharge their arrows, and if the shots be accurate, the animal will either die almost immediately or it may be able to run a short distance, but this happens very seldom. The most interesting and peculiar way among them in hunting the wild boar and perhaps the most certain and complete method is the following:

All the people of the settlement, including women and children, will go to a place known by them to be the trail of the boar. This place is usually some point of mountainous land lying along the sea. Certain men who are skilled in shooting the arrow take a position well selected, where in all probability the animals will pass. The women and children and unoccupied men will spread about in the woods, breaking forth into terrible shrieks, some howling and others barking like dogs. These shouts and noises bewilder the boars, which hasten towards the positions taken by the shooters who await them with bow and arrow. Very often they escape the darts and jump into the sea. But two bancas having previously been prepared and manned, the poor animals cannot escape that way. This hunt usually continues for a day and even longer. Afterwards they return to their houses with the spoil. Almost in the very completion of the hunt they begin to eat the flesh. This manner of hunting is known as sagbay.

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After the harvest there is a period of almost complete inaction. They go about from place to place as the spirit moves them either along the sea to fish or to the mountains to gather whatever they may desire.

The Batacs of the plains weave the small baskets known as baay, but never in quantities sufficient even for their own use.

They do not weave the beautiful petates which the Apurahuanos and Palawanos make. They are people who are very dirty, uncivilized and enemies to any kind of toil. They never work unless they are hungry. They eat like beasts, each man being able to hold as much as two able-bodied men of our kind; a fact which I found out upon different occasions when I employed Batacs to work the soil and plant the palay during the six years I lived in Caruray. After having eaten they want to lie down, for they do not like to work when they are filled or satisfied.

The Batacs trade with the Christians and Tagbanuas. They bring from the mountains almaciga, bejuco, and beeswax in exchange for bolos, cooking utensils, etc., which are always paid for in advance. They are so very lazy that never do they fully pay, with the products brought from the interior, for the articles which were advanced to them by the trader. Consequently they are always involved in debt. The debtor is converted into a sort of slave. Thus he is obliged to go to the mountains to gather the products thereof, whenever his creditor desires him to do so.

They have no weights and measures of their own invention; the gantas and weights which they use are those of the Christians. Very seldom do they use the chinantanan of the Apurahuanos and Palawanos. The measure of the arm and palm, of course, is in constant use.

The arms of the Batacs are the bow and arrow, the blow-gun, and the lance. The use no guns, krises, or bolos. The darts and arrows are made of the palma brava. Their form is that of a harpoon. This arrow is used only against their enemies.

There are three kinds of musical instruments which this tribe use that merit special mention.

The codiape is a sort of guitar, six or more feet in length. It has only two cords of the fiber of the olango or bancuang. The form of this instrument varies. Some are very large and shaped like the head of an alligator. It is played either by man or woman while the other sings the song known as avellano.

The budlong is a joint of caña espino with a hole in its center

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like that of a guitar. It has two strings made of the cane and which rest upon a sort of wood placed at both ends. It is to be understood that these strings are not taken out of the case but are a part of it; for with great care they will insert the point of the knife where the strings are to be and raising the fiber they will cut a string the size of a match or larger. Under it they will place a small piece of wood upon which the string rests. This is done in the same way at the other end. Thus the two strings are made.

The lantoy is a species of flute. It is made of caña bojo and has two holes. This instrument is played with the nose.

Regarding the Tagbanuas Tandulanos

Besides the mountain Batacs who live near Caruray there is another small tribe known as Tandulanen and who number no more than twenty persons. These people occupy the Bay of Santa Cruz de Mayo, known thus geographically, but whose native name is Tugdunan. This beautiful bay is sheltered by various islands, the principal one being Buhayan and along whose shores live quite frequently the Tandulanos. They are very agile and little in stature. They resemble the Batacs very much even in speech, differing slightly in tone and in some words which they have assimilated from other dialects which are so numerous in this island. They are darker than the Batacs, probably, because they are more exposed to the sun and influence of the sea. They live on headlands, on the beach and in coves. They construct no huts in which to live. They are nomads. They plant nothing, not even rice, which formerly was unknown to them. They cover their loins with the bark of trees. They live upon fish, turtles, shell fish, wild hog, wild animals, and roots of plants. They are very skilled in fishing and hunting. For the former they use the harpoon known as pamulos, which they throw with great skill. They hunt the wild hog by means of the dog and the arrow. They handle the blow-gun and always have it prepared for use against their enemies. The Tandulanos are followed by their wives and children, who are carried in the same way as the Batac women carry theirs. They sleep in whatever place they may happen to be, either upon the sandy beach or in caves among the rocks. When they suffer because of cold or humidity, they build fires around which the families lie. The women give birth without any aid. The men as well as the women are fine navigators. They are children of the sea. Each family has its own baroto or baluto. They always journey together and to whatever

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place any one wishes to go, especially if it be an old man who expresses the desire. If during the voyage they meet any small boats, they desire to know who the people may be. If they be friends they will enter into conversation and trading; if they be strangers and suspicious men, they not only repel them but drive them from the spot.

Fifty years ago the Tandulanos were very cruel. They had dealings with no tribe, not even with the Batacs. The only Christian with whom they had friendly relations was the well-known Esteban Castro, a rich land owner, who with much difficulty won the friendship of these savages. They reverence the man to such an extent that in order to enter into trading with them it is only necessary to mention the name of Esteban. It is due to his intelligence and friendship that their cruelty became less and that they entered into commercial relations with the Christians of the north.

The Tandulanos twenty-five years ago were a large family, but the measles which broke out among them in 1882 caused about 80 per cent. of them to die. This disease afflicts them as a plague of small-pox, of which they have great horror.

One of the sicknesses which they greatly fear is catarrh, which in their opinion is incurable and contagious. Formerly, persons thus afflicted were buried alive. Today, however, if a person have this disease he is exiled to a lonely place and provisions are given for a certain number of days. After an interval the people will go to the place of quarantine. If the disease be cured the person can return to his home, but if he still suffers, then he is left there to die without aid or friend. In order to prevent this sickness, visiting strangers are closely examined. If they be well they can enter the dwelling place of the Tandulanos; if sick they are expelled.

During the last few years they have changed many of their ancient customs and have adopted those of the Batacs with whom they come in contact more frequently.

The oldest man in the tribe is their chief and to him are submitted all questions.

During my frequent visits to the abode of the Tandulanos, I have never been so fortunate as to witness a wedding ceremony, but it is the same as among the Batacs. Any kind of a union is legal. A man who is married to his mother (after having become a widow) or sister is considered a worthy man.

This tribe is the lowest of all the tribes of Palawan. They do no kind of work, not even pertaining to their own use, much less do

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they engage in any kind of trading. The only thing I know them to do is to hunt the bees, the honey and larvæ of which are their favorite food. The wax they reserve for the traders for which they receive bolos, etc.

A man in order to be rich must have a great number of arms and clothing made of beaten bark.

Lately the Tandulanos, imitating the Batacs and the Christians, have begun to prepare the soil for the planting of squash and camote, but in quantities hardly sufficient to supply their needs during the days of the harvest. It seems as though scarcely having begun to plant a little rice, which is done with no pleasure, they abandon so useful an occupation. This is one reason why they are in such a miserable condition. But there are some of them who during this year have planted vegetables, tubers, and even palay.

The Tandulanos have no musical instruments. Neither do they observe any fiestas.

Because of their hostility and their lack of hospitality in trading with strangers we have little knowledge concerning the customs of the Tandulanos.

The Civilized Tagbanuas or Silanganen

The Silanganen are the Pagbanuas who are civilized and Christianized and who dwell in the barrios of the north, east and west of Palawan. They are found along the coast extending from Babuyan to Silanga in Taytay on the east coast; and from here around the point of Cagbuli to Malampaya on the west. In all the barrios the Cuyono dialect is usually spoken. This dialect has been brought hither by the emigrants from the island of Cuyo, the former capital of the province. Today the Cuyono people are the most numerous, for the original inhabitants have disappeared. I need not speak regarding the habits and customs of the Silanganen, for they have adopted the civilization of the people of Cuyo with whom they have lived in harmony and friendship until this day.

Puerto Princesa, March 30, 1906.

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SMITHSONIAN MISCELLANEOUS COLLECTIONS
VOLUME 78, NUMBER 3

E. H. Harriman Fund

THE CLASSIFICATION AND DISTRIBUTION OF THE PIT RIVER INDIAN TRIBES OF CALIFORNIA

BY
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(PUBLICATION 2874)

CITY OF WASHINGTON
PUBLISHED BY THE SMITHSONIAN INSTITUTION
DECEMBER 31, 1926

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The Lord Baltimore Press
BALTIMORE, MD., U. S. A.

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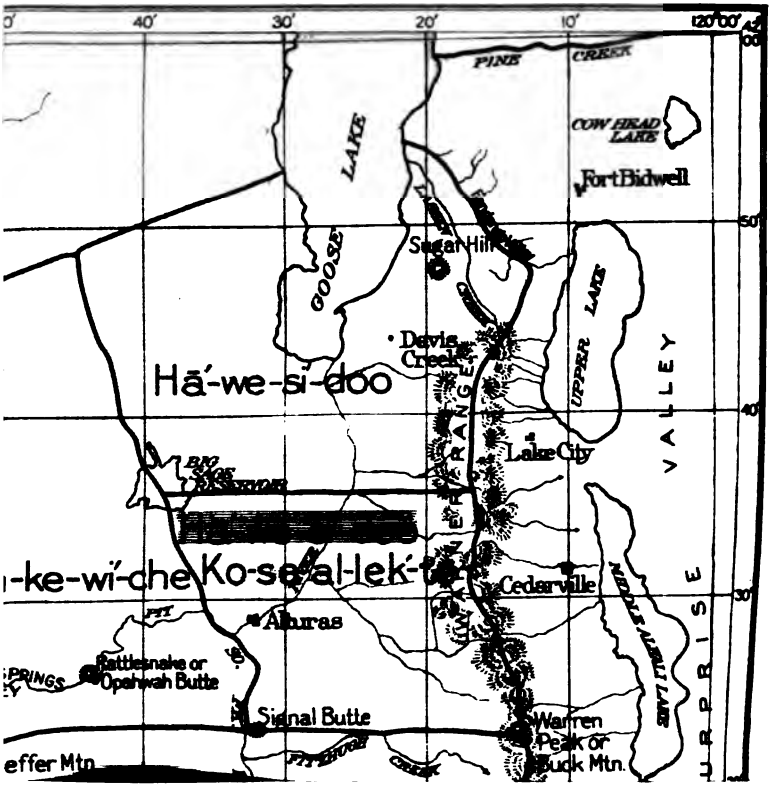

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THE CLASSIFICATION AND DISTRIBUTION OF THE PIT RIVER INDIAN TRIBES OF CALIFORNIA

By C. HART MERRIAM

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INTRODUCTION

The present paper embodies some of the results of field work among the Pit River tribes begun in 1907 and continued at intervals for 20 years. From 1887 to 1910 the work with Indians was incidental to zoological and botanical studies conducted while mapping the Life Zones for the U. S. Biological Survey, but since 1910 it has

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been continued under a special fund contributed by Mrs. E. H. Harriman for my investigations as research associate under the Smithsonian Institution.

The lamentable dying off of the old people, in many cases the last survivors of tribes on the verge of extinction, is a matter of grave concern and has seemed to demand the stressing of this work in advance of everything else—for the gathering of vanishing data is a duty we must all recognize.

The material here published relates to the classification and distribution of the Pit River tribes. The results in general anthropology, mythology, ethnozoology and ethnobotany are reserved for later communications.

My work in anthropology has been done *not* for the ultra specialist in linguistics, but for the average educated American who wants to learn about our aboriginal inhabitants. The alphabet employed therefore gives the usual sounds of the letters in the English alphabet. The only addition is the super ^{ch} to denote the sound of *ch* in the German *buch*—a sound lacking in English but common in many Indian languages.

Disquieting special and abnormal combinations and usages—such as *c* for *sh* [spelling shut, *cut*] ; *c* for *th* [spelling that, *cat*] ; *tc* for *ch* [spelling church, *tchurtch*] ; *s* for *sh* [spelling sham, *sam*] ; *ts* for *s* [spelling sad, *tsad*] ; *dj* for *j* [spelling bluejay, *bludjay*] ; *au* for *ow* [spelling how, *hau*] ; *x* for aspirated *h* or *k*, and so on—have not been adopted.

In writing Indian words many anthropologists are opposed to the use of the hyphen. Thus, no less an authority than Roland Dixon, in reviewing a scholarly contribution to the ethnology of California, states: "The advisability of such extensive hyphenation as is here used is open to question, and it is to be hoped that in further publications the forms will be given without this unnatural separation, convenient though it may be in some ways." (*Am. Anthropologist*, Vol. 6, p. 715, 1904.)

I am of the opposite view, believing that the liberal employment of the hyphen in the separation of syllables is most helpful both to the transcriber and the student.

Many of the names used by the several tribes for neighboring tribes are the place names of the localities where the principal or 'ruling' villages were situated—and in more than one case the village bore the same name. They are here recorded as spoken, although it should be kept in mind that when properly used in the tribal sense, the terminal *le, me, se, te, we, ye,* or *che,* or at least *e,* should be added.

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In the lists of names of the tribes it often happens that several spellings are given for the same name. This means that different members of the tribe have given variations or different pronunciations.

The information here presented has been obtained at different times from a number of Pit River Indians of different tribes. Several of the informants are no longer living. Those who have helped most are Istet Woiche (known to the whites as William Hulsey), leader of the *Mo-des'-se;* Samuel and Robin Spring, *As-tah-ke-wĭ'-che;* Robert Rivis and Harry Wilson, *Ap-woo'-ro-kăe;* Jack Williams (chief), Sam Steel and old Pete, *Ham-mah'-we;* Harry George (chief) and old Billy Quinn and wife, *At-wum'-we;* Davis Mike and wife, *Ă-choo'-mah'-we.* Much of the *Ă-choo'-mah'-we* material was obtained 20 years ago.

The accompanying map (frontispiece) shows the distribution of both groups of Pit River tribes (*Achomaw'-an* and *Atsook'-an* Families) and also the contiguous parts of the ranges of all the surrounding tribes.

Failure to receive proof of the map necessitated a correction of the position of the tribal name *Hā-we-sĭ'-doo* after the map had been printed, and prevented changing the color of the *Yah'nah* area, which too closely resembles that of the adjoining *At-soo-kā'-e* tribe.

My daughter, Zenaida Merriam, who for years has accompanied me in my fieldwork among California Indians, has rendered efficient help in the preparation and proof reading of the present paper.

C. HART MERRIAM.

October, 1926.

THE PIT RIVER TRIBES OF CALIFORNIA—ACHOMAWAN STOCK

GENERAL DISTRIBUTION

The Pit River tribes dwell in the northeastern corner of California from the Big Bend of Pit River and Montgomery Creek easterly to Goose Lake and the Warner Range, where they reach within 10 or 15 miles of the Nevada line, and within 6 or 7 miles of the Oregon line.

On the west they occupy both slopes of the heavily forested northern extension of the Sierra Nevada, spreading thence easterly over the broken lava country and open deserts of the western part of the Great Basin area—though by the accident of the present course of Pit River,

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which cuts deep canyons through the mountains, some of their lands now drain into the interior of California.

The earliest name I have seen for the Pit River Indians is "*Palaihnih* or *Palaiks*," published without enlightening information by Horatio Hale in 1846 (*Ethnography of the Wilkes Exploring Expedition*, pp. 218, 569, 1846).[1] The term was adopted by Gallatin (1848), Latham (1850, 1854, and 1860), Berghaus (1852), Ludewig (1858), and others, and has been recently revived by Kroeber (*Handbook Inds. Calif.*, p. 282, 1925).

The term *Achomawe*, now in general use, seems to have been introduced by Stephen Powers in 1874 (*Overland Monthly*, Vol. 12, pp. 412-415, May, 1874) and quickly superseded "Palaihnih or Palaiks." With variations in spelling it was again used by Powers in 1877, and accepted by Yarrow (1881), Mallery (1881), Curtin MS (1889), Powell (1891), *Handbook Am. Inds.* (1907), Dixon (1908), Chamberlin (1910), Kroeber (1925) and other present day writers.

While for a number of years the tribes under consideration were commonly referred to collectively as constituting the *Achomawan Stock*, and later as the *Shasta-Achomawi* [still later reduced to Shastan], it should be borne in mind that the word Achomawe is *not* in use among themselves except in the form *Ah-choo'-mah'-we* (or *A-ju'-mah-we*), the specific name of one of the tribes—the one in Fall River Valley. They have no collective or general name for themselves.

It should be borne in mind also that the Pit River group is by no means homogeneous, the component tribes speaking two very distinct languages, as pointed out by Dixon in 1907,[2] and emphasized by my much more extensive vocabularies. I regard the differences as of Family rank.

CLASSIFICATION

The term *Family*, according to my ideas of classification, is of distinctly lower rank than *Stock;* a Stock may include several very distinct families. Twenty years ago, when discussing the use of these terms, I said:

> Ethnologists use the terms "stock" and "family" interchangeably, regarding them as synonymous, and drop at once from stock to tribe, giving no heed to divisions of intermediate rank. And if evidence of relationship, however

[1] Apparently from the Klamath word *p'laikni*, meaning from above, or upper country, applied to members of their own tribe on Sprague River.—Gatschet, *Klamath Dictionary*, p. 269, 1890.

[2] The Shasta-Achomawi: A new linguistic stock, with four new dialects.—Amer. Anthrop., Vol. 7, No. 2, pp. 215-216, April-June, 1907.

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remote, is detected between two or more stocks the practice is to merge such stocks under a common name and pool the contained tribes—as if the aims of science were served by the abolition of group names and by mixing together in a common jumble a rabble of tribes of diverse relationships! (*Am. Anthropologist*, vol. 9, No. 2, p. 340, April–June, 1907.)

In the case of the Indians now under consideration, I deem it a mistake to stretch the *Shastan Stock*—as has been done by Dixon and Kroeber—by referring to it such strikingly unlike tribes.

The Pit River tribes, as already stated, fall naturally into two widely different groups—a northern and a southern. Of these tribes, nine speak slightly variant dialects of the northern group—which may be called *Ăchoomah'-an;* while only two speak similarly variant dialects of the southern group—which may be called *Atsookā'-an*. The names of the nine *Ăchoomah'-an* tribes (from west to east) are: Mo-des'-se, To-mal-lin'-che-moi', Il-mah'-we, Ă-choo'-mah'-we, At-wum'-we, As-tah-ke-wi'-che, Hā'-we-si'-doo, Ko'-se-al-lek'-tĕ, and Ham-mah'-we. The names of the two *Atsookā'-an* tribes are At-soo-kā'-e and Ap-woo'-ro-kā'e.

The classification here suggested may be readily seen from the following table:

CLASSIFICATION OF THE ACHOMAWAN STOCK

STOCK	FAMILY	TRIBE
Achomawan	Ăchoomah'-an	Ă-choo'-mah'-we
		As-tah-ke-wi'-che
		At-wum'-we
		Ham-mah'-we
		Hā'-we-si'-doo
		Il-mah'-we
		Ko-se-al-lek'-tĕ
		Mo-des'-se
		To-mal-lin'-che-moi'
	Atsookā'-an	At-soo-kā'-e
		Ap-woo'-ro-kā'e

COMPARATIVE VOCABULARIES OF THE ACHOOMAH'-AN AND ATSOOKĂ'-AN LANGUAGES

An examination of the accompanying vocabularies, arranged to exhibit in parallel columns the differences and similarities of the languages of the two sets of tribes, will suffice to show the grounds on which I have elevated the *At-soo-kā'-e* and *Ap-woo'-ro-kāe* tribes to family rank, under the name *Atsookā'-an* Family, thus separating them from the Pit River tribes proper—the *Achoomah'-an* Family.

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Among the tribes of each of the two families, many words differ dialectically. Such words are here omitted, the purpose of the accompanying table being to bring out the striking resemblances and differences between the languages of the two groups.

In the case of birds, a number of species are named in imitation of their note or call. Such onomatopoeic names, being essentially the same in all the tribes, are not included in the vocabularies. Omitted names of this kind are:

Sparrow Hawk	Lik'-le'-kah
Raven	Kahk'
Crested Jay	Kahs-kah'-sah
California and Woodhouse Jays	Tsi'-tsi'-ah
Poorwill	Po-luk'
Valley Quail	Sah-kah'-kah

COMPARISON OF WORDS IN ACHOOMAH'-AN AND ATSOOKĀ'-AN LANGUAGES

	Achoomah'-an Tribes	*Atsookă'-an Tribes*
1	Ham-mis	Choo' (or Jew')
2	Hahk'	Ho-ke'
3	Chas'-te	Kis'-ke
4	Hah-tah'-mah	Hahk-kow'
5	Lah'-too	Her-rah'-pah-kin'-nah
6	Mus-oo'-itch	Che-roo-poot chuk'-ke
10	Mah-lo'-se	Chew'-wik-she
People	Is' (or Ês)	Ow'-tĕ' (How-tĕ')
Man	Yal'-le-yu	Kahs-we-wah'-ho'
Woman	Ah'-me-tā-o-chan	Min-nĕ-re'-char'-rah
Old woman	We-ah-chah'-loo	Pā'-chah hā-char-rah
Father	-nā-chah	-tah'-tah
I	It (or Êt)	Ahk (or Ok)
You	Me'	Me'-e
Head	Lah	Nah-hah'
Forehead	Ool'	Aw^{ch}-ah-de'
Eye	Ah'-sah	O'-ye
Nose	Yah-me	Yu'-de
Ear	E-saht'	Ahs-mahk'
Throat	Hal-lōk	E-tsis'
Mouth	Ahp'	Ah-poo'
Lips	Poo'-lip	Poo'-lip
Tongue	Ip-le'	Ah-pă-le'
Neck	Wahp'-te	Oop-ke (or Ōp-ke')
Knee	Kaw-hwi	Bul-lōts
Arm	Lah-pow'	Rah-pow'
Hand	Êl	E^{ch}-de'
Nails	Al-le-tsah'	Me-choo'-rah

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Belly	Pin-nōk′	O′-me′
Chest	Ko-kōs	Too-koo′-rah
Breasts	E-chit	Ah-chis′-kah
Feet	Che′-koi	Chōts′-kĕ′
Skin	Ĕ′-moo	Ĕ-we′
Hair	Te′-ye	War-ri′-ne-kahs′
Teeth	E-chah′	E-tsow′
Bone	Al-lah′-te	Choot′-se′
Tendon	Pim′	E-peu′
Brain	Hem-mal′	Ches′-kah har′-rah
Heart	Hah-dah′-che	Yōp-wi′-ke
Liver	Oo-wā′	Oop′-se
Intestines	Pētch-hol	Pits-hor′-re
Blood	Ah-te	Is′-soo-re
Strong	E-pah′-che	E-pah-ke′
A dance	Tā-hā-kah-le	Yo′-pi′
A song	Dă′-se	Yā′-che′
Rabbitskin blanket	Chal-lo′-kah (or Chĕkah′-te)	Tsah-to′-ro
Moccasins	Kĕ-lah′-lah	Kā′-oo-nar′-rah
Buckskin	Tek-wah′-le	Tips-we′-re
Snowshoes	Tah-pah′-ge	Wir′-re
Shell necklace	Tah-se′-ge	Yo-kĕ-nas′-we′
House	Te-loo′-che	Yow′-te
Ceremonial house	Ahs-choo′-e	Tsum-mah′-hah′
Fire	Mah-lis′	Ah′-hah-we′
Fireplace	To′-ah-ēt	Pah-ye′-tse
Coals	Howk	Chōk′-che′
Smoke	Mah-kets	Rāk′-poo
Fire drill	Tow-wah′-che	Wŏ-te′-kĕr-ras′
Bow	Loo-poo-e′-se	Too-mir-re-ye (To-mid′-ye)
Arrow	Les-tah-ke	Kahp′-ste′
Stone arrow point	Tah-pus′-to-me	Mik′-ke-dĕ′
Quiver	Too-ni′-e	Wits′-tahs′
Sling	Chă-mĕ′-tĕ	Tsā-te′-mah
Digging stick	Kahs′-wah	Hahs′-wah′
Cooking basket	Pah-poo′-gah	Taw^{ch}-o-de′
Baby basket	Tōts-chah′-me	Yah^{ch}-per-re′
Mortar basket	Kal-lo′-wah (or Kal-loo′-wah)	Ken-no′-wah (or Ken-nah′-ho-wah)
Stone pestle	Ko′-pah	Choo′-poo′ (or Tsoo′-poo′)
Grinding stone (Metate)	Se′-lah	Chahs-koot (or Tsas-kōt′)
Handstone for rubbing	Sah′-wah (or Tsah-wah)	Tsah-wah′
Fish net	E′-kā-low′	E-ke-row′
Meat	Me′-soots′	Ah-soop′

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Dried meat	We-soo'-che me'-sootch	Māk-wā ah-soop
Marrow	To-kā'-se	Yo'-kis-se'
Fish	Ahl'	Mah-tse'
Eggs	E-sah'	Ē-tsah'
Acorns	Tĕ-tahts	Tah-ke'
Salt	Tēs	Eu'-tĕ (Yu'-tĕ)
Medicine	Ted-dal'-waht-kă	Che-was'-so'-hes
Tobacco	Oop'	O-pe'
Pipe	Skōt'	Skot'
Good	Too'-se	Woo-si'
Bad	Al-lă-ho'-koi-e	Sow-kah
Lake	Loo'-poo	Poo-wow'
Water	Ahs'	Ah-che'
A spring	Sap'-te	Pah'-poo-tse
Mountain	Ah'-ko	Ah-hă-o'
Valley	At-wum'	Ahk-win'-ki
Road or trail	It-tā-oo	Ah-koo'-roo-e'
Rock (stone)	Al-lis'-te	Noo'-yah-hĕ
Sand	Tahs (or Tas)	Tis'
Mud	Ah-moo'-yah	Ah-moo'-yah
Fog	Ah-too'-mum	Wēt-să-be'mits
Rain	Ahs-che (Tas'-che)	Koi-yit' (Ki-ye-te')
Snow	Te'	E'-te'
Ice	Lah'-kahts	Pah-too-re'
Wind	Tā-ho'-me	We'-so' (Ye'-soo)
Summer	Ah'-loo'-e	Ahp-noo'-e
Winter	Ahs-choo'-e	Ahs-choo'-e
Hot	Ahs-stah'-ke	Pā-o-kah-tah'-we
Cold	Ahs-tā-yu	Yes'-ko-pah'-we
Yesterday	Me'-chim	Oos'-pe'
Today	Bah'-lah	Pin'-ne-kah'-se
Tomorrow	Lo'-ko-me'	Lōk-mah'-se
Daytime	Mah-tik'-chak	Ah-se'-ye
Night	Mah-hek'-chah	Ah-pā'-nah
Now	Pahl'-mus and Wā	Kā-nē'-kah (or Ken'-ne-kah)
Not yet	Nahm'-yu-we	Ow-ko'-ŏ' (or Ah-ko'-ŏ')
Long ago	Ĕs-kah'-ne'-tse	Pah-lahk'-me (or Bel-lok'-mim)
Sun	Chool'	Tsun'-ne-oo'
Lightning	Tid'-dah-lum'-che	Pah-loop-lahk'
Clouds	Ah-loo'	Nah'-mis-to'-che
Shade	Wā'-lah	Mahs-ke'
Many (plenty)	Kahm (Kah'-me)	Tsah-ko'
Big	Wah-wah'	E'-te-ke
Little	Chawk'-chă	E-win'-ke

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High	Hā'-wis	Choo-pow'-al-lĕ (E'-mar-rah')
Low (or down)	Chōk-chahk-chook-che	A-po-tah (Ow-oo-tā')
Long	Wah'-wahk choo'-che	Choo-pow'-al-lĕ
Short	Chōk-chah-kah'-de	E-we-kah'-lĕ (E-win'-kah-lĕ)
Straight	Ets-poo'-e	E'ts-pĕh'
Crooked	E-ke'-le	Pāt-kĕ-le'
Middle	E-se' (Is-se')	Choo'-se
Full	Ah^{ch}-too-ge	O-pā'
Where	Chah'-wah	Ah'-ke'
Here	Pe'-wah	Kah'-ke
There	Hook-yĕ' (Gook-yĕ)	Koot-skah'
Grizzly Bear	Woi' (Woi^{ch})	Be'-re-ke (Pe'-re-ke)
Black Bear	Wah-he'-mah	We'-ke-rits'
Mountain Lion	Dah-chah'-lah (Tah-tsah'-lah)	Wă-rahk'-mit-tah'
Bobcat	La-tsah'-le (Nā'-tsah-le)	O-de-ahs'-we
Coyote	Jā'-mool	Mah'-ke-tah'
Big Wolf	Tse'-moo	Mi-yah'-ke
Otter	Hah'-seu	Ser-ruk'-kă-se
Big Skunk	Hah yen'-nah	Hah yen'-nah
Little Spotted Skunk	Sen-net'-ke	Sen-not'-kah
Badger	Hahk'	Wĕ'-he-yah
Mink	Choo-pah'	Yut-poo'-re-yu
Weasel	Yahs'	Nim'-che-ge (Noo'-che-ge)
Mole	Wahl'-lakh-moo'-sah	Pis-tik'
Elk	Bow	We-did'-e-ke (Wă-re'-rik-ke)
Deer	To'-se (Do'-se)	Mah'-koo
Antelope	Chā-kah-kow'-we	Wahs'-te
Bighorn (Mt. Sheep)	Lah-mah'-te	Wim'-mĕ-ke
Beaver	Pōm (Poom)	Hah-yah'-dah
Ground Hog (Marmot)	Ah-mahl'	Po-ye'-ke
Gray Ground Squirrel	Ah-chaht'	Het'-war'-ruk
Gray Tree Squirrel	To-wah'-te	Wahs'-war'-re
Chipmunk	To-kis'	Tsoot-wi'-ah
Pocket Gopher	Is-taht'	O-yā'-he (Yam-yā'-tsah)
Kangaroo Rat	Te-noon'-dah	Tis-wah-dā'-de
White-footed Mouse	Yā-ne'-nah	Tsoom'-se
Wood Rat (round tail)	Tah'-me-yoos'	Tōk-pā-dah
Cottontail	Hah-waht'	Dā'-buk-ke
White-tail Jackrabbit	Waht'-waht	Pah-koo'-rah
Tail	E-pe'	Tip'-poo-wer'-re (Tĕp-hwe'-re)

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Horns or Antlers	Poo'-wah	We'-pah-ke
Excrement	Ahp'-se	Wĕ'-ke
Hole or Burrow	Woos'-che	O'-ye
Golden Eagle	Low-we'-chah	Pit'-we (Ĕt'-we)
Bald Eagle	Hem-mah'-lah	Pot-pe-did'-de
Red-tail Hawk	Mah-tit'-ke	Tis'-so-tah
Fish Hawk	Poo'-tis	Tōk-tōk'-is-se
California Condor	Ahm'-pin-ne	Oom'-pin-ne
Turkey Buzzard	Noots'-ke	Chah'-te (Tsah'-te)
Great Horned Owl	Chum-mah-hah'-loo	Soo'-kah-how
Crow	Ah-we'-chah	Ah-i'-e-se
Blue Grouse	Tam-moom	Wā'-mah-hi'-wah
Mountain Quail	To-ahk'	Toi-toi'-se
Meadowlark	Ham'-me-choon'-tah	Tĕts'-ko-lah'
Nighthawk	Pĕ-sek'	Se'-yu-talĭk
Kingfisher	Cho'-lo-ah'-mah	Kil'-lĕ-sis'-se' (Ker'-re-sis'-se)
Pileated Woodpecker	Mahk-mah'-kah	Waht-tah-di-wah
Lewis Woodpecker	Dă (Tĕ)	Chew'-che-wah'
Hummingbird	Chā-pah'-sah	Pă-tsoos'
Pelican	Mah-mil'	Mah-me'-dah
Great Blue Heron	Pel-lah-kes'	Pel-lah-kās'
Mudhen	Al-loo-tsōk	Al-loo'-chuk
Birds (all kinds)	Che'-kah	Che'-kah
Eggs	E'-sah'	Ĕ'-chah
Feathers	Taw-hā	Ĕ-top'
Rattlesnake	How'-tah (Hoo'-tah)	Ahs-cho'-me
Gartersnake	Ho-mā'	Hel'-lo-ki'-wah
Scaly Lizard (Sceloporus)	Chā'-hā-nahts	Sik'-tan-nah'
Turtle	Hah'-pits	Ah'-pits
Fish	Ahl'	Mahk'-tse
Salmon	Ahl-lis'	Ah'-nĕ
Trout	Sal'-le-pi'	Naht'-tă-ye
Sucker	Laht-hā	Bik'-ye
Dragon Fly	Hal-loo'-mah (Hal-le-yoom')	Chets'-koo-mah
Butterfly	Wahl-wahl'-lah	Top'-lah-lah (Hah'-lah-lah')
Mosquito	Al-le-hah	Po-ri'-wah
Flea	Ah-che-tsah'	Che-kah-pĕ'-re
Yellowjacket	Chā'-yu	Mo-mo-mis'-e-se
Spider	Chah-hah'	Wĕk-mah'
Douglas Spruce	Lah-so'	Mah'-tis ōp
Juniper	Ko'-se-mel'-lo	Mah'-hah ōb
Incense Cedar	Lah-too'	Nah-tōb
Yew	Mus-swe'-lo	Paht-soo'-ye

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Black Oak	Tat'-tah-cho'	Tah'-ke ōb
Mountain Mahogany	Chooṣ-leō	Pah'-he-bah ōb
Elder	Hal'-le	Po'-raw-ko'-bah ōb
Manzanita	Pat-choi'-yo	Wā-yar ōb
Wild Plum	Paht-te'-lo	Paht-kōb
Chokecherry	Poo-le-lo' (Bul-le-lo')	Choo'-e-wup ōb
Serviceberry	Pe'-tah-lo	Pāk-ne-kōb
Sagebrush	Pah'-tah	Ko-pōp ōb
Big Round Tule	Aht'	Wahm' ōb
Flat Tule (Cattail)	Poo-sahk'	Keu-să-rōb
Grass	Has'-te	Kah-se'-re
Flower	Ah-mahl'	New'-ye-ne
Leaf	Ah-tah'-pah	Lah-tahb'
Root	Wah-too'	Wah-too'
Tree	Ah-soo'	Ahts'-we'

THE HIGH AND LOW LANGUAGES

Attention should be called to the interesting fact that in addition to the language of the common people, there is a *"high language,"* spoken by the chiefs, medicine men, and other leaders. I have found *"high languages"* also among the *Me'-wuk* and a few other tribes; they were not understood by the common people. Such languages are worthy of special investigation as likely to throw light on ancient relationships.

In the case of the Pit River Indians, thirty-four words of the "high language" of the *Mo-des'-se* were given me by *Istit Woiche,* venerable leader of that tribe. No special effort was made to obtain them—they were given incidentally and always mentioned as *"high words"* to distinguish them from the common words, called by him "low words." These are brought together in the following table. Doubtless many more might be secured.

FRAGMENTARY LIST OF "HIGH" AND "LOW" WORDS OF THE MO-DES'-SE LANGUAGE

	LOW WORD	HIGH WORD
Father	No-nă'-chah	To-wah-e'
Mother	Ne-noo'-chah	Tah-te'-e
Old man	Tah-he'-yu-chah	We'-ah-che' yah'-le-yu
My wife	E-too ah-me-tă'-o-chan	Ham-mis
Orphan	Mah-hă'-noo-chum	Sōm-tah'-le
Lover	Das'-poo-i'-me	Kah'-choo dol'-le lok'-te
Puberty	De'-mah-cho'-ke	Del'-lă-hah'-che
Pregnant	Sow'-too-we	E'-se'
Proud	E'-sim to'-je	Lah-sats to'-je
Ashes	Mah'-soo-ke	To'-ko

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Smoke	Mah-kāts′	Bahk′-mŏ
Smoke hole	Mah-kets′ ah-pit′	Mak-kets′ oo′-tad-de ki′-mit
Poker	Se′-kah	Te-nah′-lā yēs-tă
Light from fire	Tŭ-mā-ki′-e	Tip-le′-che
An earthquake	De-go-wi′-ye	Tĕ-poo′-mĕ
Clear	Tah-saht-we	Tā-ho-chow choo-we
Rain	Tahs′-che	Too-tsim′-che
Lightning	Tid′-dah-lum′-che	Til-loo-plok′-che
Earthquake	Te-poo′-me	Tig-goo-wi′-e
Sunset	Cho′-lo-to ches′-che	To-lōp-chij′-je
First	It-tahm′	Pā′-tum
Last	Kes′-tum	Ke′-tahk-chum
Soon	Too-wil-chahn	Hoo′-tah
Common	Tah-kow′-chan	Kah-de′-kah dok′-me
Plenty	E-kah′-che	Kum′
Many (or much)	E-kah′-che	Kum′
Behind	Tin-ne-kah too′-je	Te-ah′-too
Trade	Tah-we′u-che	Tan′-nah mut′-se
This	Pe′	Pe-kah
The same	Mah′-mo chi′-e	Ah-mits-kah ahn′-che
Mt. Shasta	Ĕt-ah′-ko′	Ă-te chan′-nah
Doctor	Tse-kēo′	Hi-ă-too and Wah-sahk′-chan′-ne
Woodpecker	Chis-to′-tol	An′-nă-wah se′-lah
Hand me (pass to me)	Ste-lah	Stĕ-goo′-yahk

CONTRASTING ENVIRONMENTS

The *Ächoomah′-an* tribes are exposed to an unusual range of physical and climatic conditions and, as would be expected, are profoundly influenced by the local environment. Thus the *Mo-deś′-se,* the most westerly tribe, inhabit the dense humid forest of the west slope of the Northern Sierra—a habitat comparable with that of some of the northern Coast tribes; while the *At-wum′-we, As-tah-ke-wĭ′-che, Hă′-we-sĭ′-doo, Ko′-se-al-lek′tĕ* and *Ham-mah′-we* inhabit open or broken country, in the main arid and treeless—a habitat comparable with the sagebrush plains and open deserts of northern Nevada and southern Idaho—the home of the Northern Piute, Bannok, and Shoshone tribes.

The necessity for adapting themselves to such diverse environments is a matter of life and death, for the exposures to sunlight and wind and storm vary from dark shady forests to barren open deserts; the animals and plants available for food, clothing, and medicine are strikingly different, requiring diverse methods of capture and treat-

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ment; the ceaseless struggle for existence differs vastly in intensity, and even the method of guarding against enemies implies unlike forms of vigilance.

It is inevitable that the continued pressure of such widely different environments for a long period of time—measured by thousands of years—should produce notable differences in the lives, habits and beliefs of the people, and if continued long enough might be expected to affect the language and even the physiognomy.

DISTINCTIVE ANIMALS AND PLANTS OF THE HUMID AND ARID AREAS

Persons familiar with the climatic requirements of our western animals and plants will be interested in the accompanying tabular statement of distinctive species of the contrasting areas:

DISTINCTIVE ANIMALS AND PLANTS OF THE MO-DES'-SE AREA (HUMID FOREST, SEE PLS. 1 & 2) COMPARED WITH THOSE OF THE AT-WUM'-WE AREA (ARID DESERT, SEE PLS. 9 & 12)

MO-DES'-SE AREA	AT-WUM'-WE AREA
Big Bend to Montgomery Creek	Big Valley, Lassen County
MAMMALS	
	Buffalo (extinct)
	Antelope (*Antilocapra americana*)
	Badger (*Taxidea taxus neglecta*)
Fisher (*Martes pennanti pacifica*)	Groundhog (*Marmota flaviventer*)
Marten (*Martes caurina*)	
California Little Spotted Skunk (*Spilogale phenax latifrons*)	Great Basin Little Spotted Skunk (*Spilogale gracilis saxatilis*)
Ring-tail Civet (*Bassariscus raptor*)	
Aplodontia (*Aplodontia major*)	
	Whitetail Jackrabbit (*Lepus campestris sierrae*)
California Blacktail Jackrabbit (*Lepus californicus*)	Oregon Blacktail Jackrabbit (*Lepus calif. wallawalla*)
California Cottontail (*Sylvilagus auduboni*)	Desert Cottontail (*Sylvilagus nuttalli*)
Snowshoe Rabbit (*Lepus americanus klamathensis*)	Idaho Pigmy Rabbit (*Brachylagus idahoensis*)[1]
Gray Squirrel (*Sciurus fossor*)	
Pine Squirrel (*Sciurus douglasi albolimbatus*)	
Flying Squirrel (*Glaucomys sabrinus flaviventris*)	
Chipmunk (*Eutamias amoenus*)	Great Basin Chipmunk (*Eutamias pictus*)

[1] Not yet collected in Big Valley but obtained a few miles farther east.

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Gray long-tail Groundsquirrel (*Citellus douglasi*)
Oregon short-tail Groundsquirrel (*Citellus oregonus*)
Kangaroo Rat (*Dipodomys californicus*)
Roundtail Woodrat (*Neotoma fuscipes*)
Bushytail Woodrat (*Neotoma cinerea occidentalis*)

BIRDS

Blue Grouse
Sagehen
Columbian Sharptail Grouse
Mountain Quail
Crested Bluejay
Woodhouse Jay
Acadian Owl
Burrowing Owl
Pileated Woodpecker
Magpie (Rocky Mt. species)
California Woodpecker
Horned Lark
Blackheaded Grosbeak
Mountain Mocker (Oroscoptes)
Oregon Robin

TREES AND SHRUBS

Ponderosa Pine (*Pinus ponderosa*)
Juniper (*Juniperus occidentalis*)
Sugar Pine (*Pinus lambertiana*)
Sagebrush (*Artemisia tridentata*)
White Fir (*Abies concolor*)
Rabbitbrush (*Chrysothamnus*)
Douglas Spruce (*Pseudotsuga*)
Gutierrezia sp. ?
Incense Cedar (*Libocedrus*)
Peraphyllum ramosissimum
Yew (*Taxus brevifolia*)
Purshia tridentata
Valley Oak (*Quercus lobata*)
Mt. Live Oak (*Quercus chrysolepis*)
Tanoak (*Quercus densiflora echinoides*)
Tree Maple (*Acer macrophyllum*)
Vine Maple (*Acer circinatum*)
Madrone (*Arbutus menziesi*)
Chinquapin (*Castanopsis sempervirens*)
Tree Dogwood (*Cornus nuttalli*)

Klamath River Mountain Mahogany (*Cercocarpus macrourus*)
Great Basin Mountain Mahogany (*Cerocarpus ledifolius*)
Redbud (*Cercis occidentalis*)
Oso (*Osmaronia cerasiformis*)
Manzanita (*Arctostaphylos patula*)
Thornapple (*Crataegus rivularis*)
Huckleberry (*Vaccinium ovatum*)
Coffeeberry (*Rhamnus californica*)
Hazel (*Corylus californica*)
Azalea (*Azalea occidentalis*)
Smilax vine (*Smilax californica*)
Mountain lilac (*Ceanothus integerrimus*)

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Buckbrush (*Ceanothus cordulatus*)
Mahala mats (*Ceanothus prostratus*)
Kitkadizza (*Chamaebatia foliolosa*)
Wild Grape (*Vitis californica*)

THE ACHOOMAH'-AN FAMILY

Boundaries.—The northern boundary of the nine *Achoomah'-an* tribes (collectively) is a nearly straight line about 80 miles in length running obliquely from a point about 16 miles northnortheast of Bartles (approximately 33 miles NNE of Big Bend) to the east side of Goose Lake. This line if continued westerly would strike Mount Shasta—as I have been told by old people of several of the tribes.[1]

The *eastern boundary,* starting from Willow Ranch[2] or the nearby mouth of Fandango Creek on the east side of Goose Lake, follows this stream in a southeasterly direction to Fandango Valley, and continues thence southerly along the crest of Warner Mountains—the time-honored boundary between the Pit River Indians and their hereditary enemies, the Northern Piutes—and over the summit of Warren Peak (Buck Mt.) and on to Buckhorn Mt. and the vicinity of Red Rock where, turning southwesterly, it reaches the neighborhood of Termo and continues thence southerly to the divide south of Madeline Plains.

The *southern boundary,* starting from the west side of Pit River west of the mouth of Montgomery Creek, follows Montgomery Creek to its upper waters, where it turns north to the southwest corner of Goose Valley,[3] which it skirts; thence north to Lookout Mountain on the ridge between Goose and Burney Valleys, whence its course is nearly due east to the pass immediately north of Bald Mountain (crossing Hat Creek between Carbon and Cassel); then northeast to Muck Valley, and east to Hayden Hill, where it turns abruptly to the southeast and south, deflected by the long tongue-like southward extension of the *Ham-mah'-we,* to Madeline Plains.

The *western boundary,* starting on the north at a point about 16 miles north (or northnortheast) of Bartles, passes southerly, skirting the western edge of Big Bear Flat to the high ridge 5 or 6 miles south of Bartles, which it follows westerly and southwesterly around the

[1] Old Indians have told me that their northern boundary abuts against an air line running from Mt. Shasta northeast-by-east to a point on Goose Lake.

[2] Some Indians put the northern limit at Sugar Hill, 5 or 6 miles south of Willow Ranch.

[3] Goose Valley (an unfortunate name) must not be confused with Goose Lake Valley about 90 miles to the northeast.

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valley of Kosk Creek and the Big Bend of Pit River to a point on the west side of Pit River a couple of miles southwest of the mouth of Montgomery Creek.

Surrounding tribes.—The *Achoomah'-an* tribes collectively are in contact with seven tribes, five of which belong to different linguistic stocks: On the west the *Northern Wintoon* and *O-kwahn'-noo-tsoo;* on the north the *Modok;* on the northeast and east the *Northern Piute;* on the south the *At'-soo-kā'-e* and *Ap-woo'-ro-kā'e;* on the southwest for a short distance, the *Nos'-se* or *Yah'-nah.*

THE MO-DES'-SE TRIBE

PLATES 1-4

The *Mo-des'-se* are the westernmost of the Pit River tribes.[1] From Big Bend of Pit River in the center of their territory they spread northerly to include the basin of Kosk and Nelson Creeks, southerly to Montgomery Creek, westerly to the nearest mountains on the west side of Pit River (from opposite the mouth of Montgomery Creek northward); easterly to Chalk Mountain and the divide separating the waters of Kosk and Nelson Creeks from those of streams further east.

South of the main body of the tribe, whose headquarters are at Big Bend, are two other bands—by some Indians regarded as distinct tribes—the *Ah-me'-che* at 'The Cove.' about midway between Big Bend and Montgomery Creek; and the *E'-poo'-de* whose principal rancheria was on Montgomery Creek two or three miles above its mouth.

[1] In August, 1855, Lieut. Henry L. Abbot (now the venerable General, aged 95) was engaged in surveying the Pit River country with Lieut. Williamson. In his report he states:

"We passed many pits about six feet deep and lightly covered with twigs and grass. The river derives its name from these pits, which are dug by the Indians to entrap game."—Pacific R. R. Reports, Vol. VI, p. 64, 1857.

The Mo-des'-se Indians tell me that these pits, called by them *Ah-pahm'*, were dug lengthwise in the trails. They were 5 or 6 feet deep and about 6 feet long by 3 wide "to fit the body of the deer." They were made narrow to prevent the deer from jumping out, and the sides were narrowest at the top, which was usually reinforced by a hewn plank projecting a little way over the edge. The opening was covered with slender sticks and leaves. A large piece of maple bark was hung above the trail, a little to one side, to warn the Indians so they would not fall in. Once a little girl was caught. Then the chiefs came together and put a stop to pit trapping.

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MO-DES'-SE VILLAGES AT AND NEAR BIG BEND

Mo-dess'.—The ruling village, situated just east of the mouth of Kosk Creek (*An-noo-che-che*) on the north bank of Big Bend Pit River. (Place and rancheria same name.)

Lah'-lah-pis'-mah.—At Hot Springs on the south side of Big Bend, opposite *Mo-dess'.*

Oo-le'-moo-me.—On south side of Big Bend just east of the actual bend. (Place and rancheria same name.)

Tah'-sah.—On a sandy gravel flat on south side of river half a mile east of Hot Springs and near south end of Rope ferry. (Place and rancheria same name.)

Al-loo-satch-hā.—Small group of houses on south side of river only about 400 yards above *Lah'-lah-pis'-mah* and hardly entitled to rank as a distinct village.

Adjacent tribes.—The *Mo-des'-se* were in contact with five tribes: the Shastan *O-kwahn'-noo-tsoo'* [now extinct as a tribe] on the northwest and north, the related *To-mal-lin'-che-moi'* on the east; the *At-soo-kā'-e* on the southeast; the *Yah'-nah* or *Nos'-se* on the south; the *Northern Wintoon* on the southwest.

NAMES USED BY MO-DES'-SE FOR THEMSELVES AND OTHER TRIBES AND BANDS

Related tribes and bands:

A-choo-mah'-we (*Ah'-choo-mow'-we; Hā'-wis-aht'-wum-we*).—Tribe occupying Fall River Valley, including Pit River from Big Valley Mountains down stream to falls about 3 miles below mouth of Fall River ..... [*A-choo'-mah'-we*]

Ah-doo-wah'-no-che-kah-te (*At-too-an'-noo-che; At-wah-noo'-che,* slurred *Tah-wahn'-noo'-che*).—Hat Creek tribe..... [*At-soo-kā'-e*]

Ah-me'-che (*Ah'-mits*).—*Mo-des'-se* band at 'The Cove' on Pit River, midway between Big Bend & Montgomery Creek (5 or 6 miles north of Montgomery Creek)..... [*Ah-me'-che*]

Ah-mit'-at-wum, Ah-mits'-che.—Dixie Valley and Eagle Lake tribe..... [*Ap-woo'-ro-kā'e*]

As-tah-ke'-wah (*As-tah-pe'-wah* and *Han-too'-che*).—Tribe in Hot Springs (Canby) Valley ..... [*As-tah-ke-wi'-che*]

At-too-an'-noo-che. Hat Creek tribe. See also *Ah-doo-wah'-no-che*.... [*At'-soo-kā'-e*]

At-wah-noo'-che.—Tribe in Hat Creek and Burney Valleys. See also *At-too-an'-noo-che* ..... [*At'-soo-kā'-e*]

At-wum-chan'-ne.—Likely Valley tribe..... [*Ham-mah'-we*]

Chah-wahs'-te' chan-ni'-che.—Goose Valley band of *To'-mal-lin'-che-moi.* [Another name for *E-tsah'-tah*].

Choo-kā'-che.—Band of *Ap-woo'-ro-kā'e* on Beaver Creek (south of Snell Ranch).

Dah-bō^{ch}-e.—Band of *At-wum'-we* in Ash Creek Valley, southeast of Big Valley..... [Pronounced *Tŏ-bŭ^{ch}-we* by the *Ham-mah'-we*]

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E'-poo'-de (*E'-pud-de*).—*Mo-des'-se* band on lower Montgomery Creek and adjacent part of Pit River. Former village on site of present Montgomery Creek postoffice.....[*E'-poo'-de*]

E-tsah'-tah.—Goose Valley band of *To-mal-lin'-che-moi.* Also called *Chah-wahs'-te chan-ni'-che* .....[*E-chah'-tah-we*]

Ham-mah'-we.—Tribe on South Fork Pit River from Likely Valley east to Jess Valley and south to include Madeline Plains..[*Ham-mah'-we*]

Ham'-mă-o-ket'-tal-le.—Another name for Big Valley tribe. Same as *To-tă'-o-me* .....[*At-wum'-we*]

Han-too'-che.—Tribe in Stone Coal and Hot Springs or Canby Valley. See also *Ah-stah-ke-wah* .....[*As-tah-ke-wi'-che*]

Hă'-wis-aht'-wum-we.—Another name for Fall River Valley tribe.....[*A-choo'-mah'-we*]

Il-mah'-we.—Pit River tribe (from falls 3 or 4 miles west of Fall River Mills down to Pecks Bridge); includes Cayton Valley and reaches upper Bear Creek. The ruling village, *Il-mah'*, was at site of Pecks Bridge and occupied both sides of the river.....[*Il-mah'-we*]

Ko'-se-al-lik'-tah.—Tribe at forks of upper Pit River, on Alturas Plain..[*Ko'-se-al-lek'tĕ*]

Mŏ-des'-se.—Tribe with headquarters at Big Bend Pit River, reaching upstream to Deep Creek. Their name for their own tribe....[*Mo-des'-se*]

Tah-wahn'-noo'-che.—Hat Creek tribe. See also *At-too-an'-noo-che*.....[*At'-soo-kă'-e*]

To-mal-lin'-che-moi'.—Tribe between *Il-mah'-we* and *Mo-des'-se;* headquarters at junction of Screwdriver Creek with Pit River (on Lindsay's place, 6 or 7 miles in air line below Pecks Bridge).....[*To-mal-lin'-che-moi'*]

Too-hat'-mah.—Cayton Valley band of *Il-mah'-we*.....[*Too-hat'-mah*]

Too-tă'-o-me (*Too-tă'-o-mal'-le*).—Still another name for *At-wum'-we,* the Big Valley tribe; also called *Ham'-mă-o-ket'-tal-le*....[*At-wum'-we*]

Wah-num-che'-wah.—Burney Valley band of *At-soo-kă'-e*..[*Oo'-kah-soo'-we*]

Unrelated tribes and bands:

Ah-lah'-me. Klamath Lakes tribe [*Klamath*]. Given by Gatschet as *Ala'mmimakt ish* in Klamath language.

Ah-poo'-e.—Northern Piute, of Fort Bidwell and Alkali Lakes in Surprise Valley.

Ah-tah'-me-kah'-me.—Tribe "toward Redding." Said to talk same as *Te'-si-che* [*Nos'-se* or *Yah'-nah*].

Â-te' ("Squaw Creek tribe").—Tribe south and east of Mount Shasta, on upper McCloud River, Squaw Creek, and in Fox Mountain region [*O-kwahn'-noo-tsoo*].

Bă-kah'-mah'-le.—See *Pah'-kĕ-mah'-le.*

Che-yu'-wit.—Tribe on Squaw Creek. [May be band of *O-kwahn'-noo-tsoo.*]

Ek-pe'-me, E^{oh}-pe'-me.—Northern Wintoon tribe; McCloud River *Wintoon.*

Hă'-wis-se-kahs'-te.—Trinity River *Wintoon.*

Loo'-too-ah'-me.—Modok tribe.

O-se'-low-wit.—Wi-dal'-pom band of *Northern Wintoon* [usually written *Ydalpom*].

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Pah'-kĕ-mah'-le (*Pah-rah'-mah-le; Bă-kah'-mah'-le*).—Northeastern ***Midoo*** of Big Meadows [*No-to-koi'-yo*].

Pas-să'-put-che.—*Yah'-nah* of Round Mountain region. Same as *Te'-si-che.*

Shas'-te'-che (*Sas'-te'-che*).—*Shaste* of Yreka and Shasta Valleys. [They call themselves *Ge'-katch* or *Ke'-katch.*]

Te'-si-che. Nōs'-se of Round Mountain, Millville, Red Mountain and North Cow Creek [*Nos'-se* or *Yah'-nah*]. Same as *Pas-să'-put-che.*

NAMES USED FOR MO-DES'-SE BY OTHER TRIBES

NAME	TRIBE USING NAME
E-tah'-me [Nickname]	*A-choo'-mah'-we*
Mah'-dă'-se	*A-choo'-mah'-we*
Mo-des'-se	*At-wum'-we* and *As'-tah-ke-wĕ'-che*
Po'-mah-de'-he; Po'-mah-re'-ye	*At-soo-kă'-e* and *Ap-woo'-ro-kă'e*
Poo'-e-choos'; Poo'-e-soos'	*Wintoon*

GEOGRAPHIC NAMES USED BY MO-DES'-SE

Alturas: Town (County seat of Modoc Co.) near junction of South Fork with main Pit River.....Ko'-se-al-lek'-tah

Bagley Mt.: On west side Pit River southwest of Big Bend.....Now'-wahs-nem'-chah

Bald Mt.: Solitary butte 7 miles south of Fall River Mills. (Indian race ground).....E-pah'-kŏ-mah

Bald Peak, or 'Bally': Bare rock dome at head of Nelson Creek on east side of Kosk Creek Basin.....Mah-how'-mah-dă ah'-ko

Also apparently.....Pah'-mah-ye'-mah

Bear Creek: Upper part of Fall River.....Soolt'-mah'

Bear Mt.: Six or 7 miles northeast of Bartles....Sōl'-mah oo-te-choo-kah'-te

Beaver Creek: Entering Pit River from south just west of Pittsville.Choo-kă'

Bee Knoll: Hill on southwest side Pit River near Hayes, about 4 miles southeast of Big Bend.....Ah' soo-tah ke'-wah

Big Bend Pit River: The ruling village of same name was on north side.....Mŏ-dess'

Big Bend: South side.....Oo-le'-moo-me

Big Basin of Kosk Creek: North of Big Bend, enclosed on north and east by Horseshoe Ridge.....Tal-lo'-we tam'-me

Big Valley: A large flat desert valley about 20 miles wide (east-west), reaching from Modoc Lava Beds south to Hayden Hill.....To-tă'-ah-me

Big Valley Mts.: Timbered range on west side of valley.....Tă-wahl'-me

Bluejay Mt.: On west side Pit River about 2 miles northwest of mouth of Montgomery Creek.....Chim-chim'-min-nuk (Chin'-che-min-nok)

Brock Butte: Between Squaw Creek and Pit River.....Ah'-lis-te te'-we-che

Buck Mt.: On west side Pit River north of Bluejay Mt.....Sal'-le ah'-ko

Buckeye Place: On Pit River 2 miles below Big Bend.....Pah'-sil-lo'-mah

Burney Butte: A lofty volcanic peak between Burney Creek and Hat Creek.....Ah-po'-hah

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Burney Creek: A long stream flowing north to Pit River, which it enters a mile or two west of Pecks Bridge.....Wah'-num che'-wah

Burney Valley: Small valley on Burney Creek northeast of village of same name; belongs to At-soo-kā'-e tribe.....Wah'-num at-wum

Butte: Small butte in Fall River Valley, 2 miles east of Fall River..... Yah-pah'-mah

Cayton Valley: On north side Pit River between Pecks Bridge and Soldier or Fort Mt.....Lah-hat'-mah

Chalk Mt.: On north side Pit River 5 or 6 miles east or southeast of Big Bend .....Too-le-pah'-ah-te ah'-ko and Chool'-oo-te-mah-wah-mah-gā'-oi

'The Cove': On east side of Pit River, midway between Big Bend and Montgomery Creek .....Ah'-mitz'

Crater Peak: (McGee and Manzanita Mts.).....Che-wah'-ko

Dixie Valley: A springy valley south of the ridge which separates the At-wum'-we from the Ap-woo'-ro-kāe. An important stronghold of the Ap-woo'-ro-kāe .....Ah-mĕt'

Eagle Lake: A large and beautiful body of water northnorthwest of Susanville; in territory of Ap-woo'-ro-kā'e.....Ah-sit'

Fall River 'City' or 'Mills': At junction of Fall and Pit Rivers..... In'-choo-te-ĕ-o

Flat: Between Soldier and Saddle Mts.....Tā-lahs'-te

Goose Valley: Northwest of Burney; home of the E-chah'-tah-iss' band of To-mal-lin'-che-moi'. Not to be confused with Goose Lake Valley, 90 miles to the northeast.....E-chah'-tah; E-tsah'-kah

Goose Valley Mountains: Long ridge just west of Goose Valley..Che-yow'-wit Its highest peak, at north end.....Tam'-mahk-de-nā-lah-teu'-choi

Grasshopper Valley: North of Eagle Lake; belongs to Ap-woo'-ro-kā'e.. Choo'-e at'-wum; At-to-maw'-wah

Grizzly Peak: Eight miles north of Big Bend.....Ah'-ko la-chah'-ke

Hatchet Creek: Next creek north of Montgomery Creek, flowing west to Pit River; belongs to Mo-des'-se.....Ah-pil'-choo-me

Hat Creek: Rising on Mt. Lassen and flowing northerly to Pit River; formerly called Canoe Cr. Headquarters of the At-soo-kā'-e tribe.... Had-de-we'-oo; Had-dik-wē'u

Horseshoe Ridge: Lofty ridge north and east of Big Bend (running easterly from Grizzly Peak; then south around heads of Kosk and Nelson Creeks to Chalk Mt.).....Ah'-ko Wil'-lah-le

Hot Springs: On south bank of Big Bend; for ages a famous health resort; much used by Indians during my visit in 1907...Lah'-lah pis'-mah

Hulsey Ridge: Low ridge occupied by road to Wm. Hulsey's house, about 2 miles south of Big Bend.....How'-we-nim'-che

Il-mah': Stretch of Pit River from falls 3 miles below (west of) mouth of Fall River to a point a little below Pecks Bridge, 10 miles farther downstream; territory of the Il-mah'-we. The ruling village (Il-mah') was on both sides of the river at Pecks Bridge.....Il-mah'

Kettle Mt.: On west side Pit River between Big Bend and 'The Cove'.. Ah'-ko Ĕs-chahk-chā'-hā

Kosk Creek: Entering Big Bend from north. Mo-dess' village was on east side of its junction with Pit River.....An-noo-che'-che

Lassen: Lassen Butte or Mt. Lassen.....Yet-te' chan'-nah

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Little Cow Creek: About 7 miles south of Montgomery Creek; in territory of Yah'-nah .....Te'-sah-dă'-e ju'-me

Lookout Mt.: Culminating point on ridge between Goose and Burney Valleys, on boundary between At-soo-kă'-e and Mo-des'-se tribes.... Soo'-kaht ah'-ko

McArthur: Small white settlement in southeastern part of Fall River Valley .....Hă'-wis at'-wum

McCloud River: Large river tributary to lower Pit River from north. One of the principal populated areas of the *Northern Wintoon*..It-tă-choo'-mah

Medicine Lake: A strange place, partly sheltered on north and northeast by Mt. Hoffman and Glass Mt.; on or near the Achoomahwe-Modok Boundary; noted battleground of *Modok* and Pit River Indians and well known to all tribes from the *Shaste* and *Wintoon* on the west to the *Northern Piute* on the east; coveted for its inexhaustable store of obsidian for arrow and spear points....Saht'-tit (from *Saht'*, obsidian)

Montgomery Creek: Stream flowing west from northern Sierra to Pit River; boundary between Mo-des'-se and Yah'-nah.....E'-pur'-re

Nelson Creek: Tributary to Big Bend from north, just east of Kosk Creek; in territory of Mo-des'-se.....Ah-lis' choo'-chah

Pecks Bridge: A well known locality on Pit River just east of mouth of Burney Creek and southwest of Cayton Valley. Close to boundary between *Il-mah'-we* and *To'-mal-lin'-che-moi'*. Former village *Il-mah'* occupied both sides of river here. At present, site of one of the great hydroelectric plants of the Pacific Gas & Electric Co.....Boo-lo'-wit

Pit River: A long stream; in times of highwater flowing out of Goose Lake; cutting deep canyons through the northern part of the Sierra Nevada, and emptying into Sacramento River a dozen miles north of Redding. Present source of much of the hydroelectric power of Pacific Gas & Electric Co. .....Ah-choo'-mah

Pit River above Fall River.....Hem-mă'-ju-me

Pit River below Fall River.....El-mah'-ju-me

Pit River Ridge: A high mountainous ridge rising from west side Pit River, and parallel to it, from Big Bend south to Mongtomery Creek. Scene of many battles between Mo-des'-se and Wintoon..... Tah'-mahk-te-nă'-lah teo'-oo-too or Tah'-mahk te-nă'-lah teu'-choi-oo too'-loo-ke

Ridge: On north side Pit River extending westerly from Chalk Mt. toward mouth of Nelson Creek.....Oo'-le-ke'-wah

Roaring Creek: Tributary to Pit River from east, north of Hatchet Creek .....Huk'-de mahs-hă; Huk'-te-mah-hă

Rock Creek: Tributary to Pit River from north, in territory of To'-mal-lin'-che-moi' .....Choo-lah'-mi choo'-me

Round Mt.: Conspicuous hill 3 miles southwest of Montgomery Creek settlement, in territory of *Nos'-se* or *Yah'-nah*.....Bus-să'-put

Saddle Mt.: Elongated two-humped mountain at southwest corner of Fall River Valley; immediately south of Fort Mt. and northwest of Fall River City.

The north hump.....Tah-mah-meu'-chah (slurred, Tah-mah'-mootch)

The south hump.....Ah-pah-tă'-me

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Sandy Flat: On south side Pit River at Big Bend Bridge, ½ mile east of Hot Springs .....Tah'-sah

Shasta, Mt.: Highest peak in Northern California.....
E-tah'-ko or Itah'-ko (low word); Á'-te chan'-nah (high word)

Soldier Mt. (also called Fort Mt.): Isolated volcanic mountain on west side of southern part of Fall River Valley, immediately north of northwest end of Saddle Mt. Old Fort Crook was at its northeast base .....Sim'-lōk

South Fork Pit River: Stream flowing west and then north (through a long narrow marshy valley) to join North Fork near Alturas, the two uniting to form the main Pit River.....Ham'-mah de'-kah

Squaw Creek: Tributary from north to McCloud River, west of Pit River .....Che-yu'-wit

Wengler: Old sawmill settlement; abandoned postoffice site.....
Woi hoo' e-tĕ-o (from *W'oi*, Grizzly Bear, and *e-tĕ-o*, trail)

Wengler: Sawmill site.....Che'-tah-tahk'-che-we (from *Che'-tah-tahk*, bracken fern, and *che'-we*, flat)

THE TO-MAL-LIN'-CHE-MOI' TRIBE

The *To-mal-lin'-che-moi'* lie between the *Mo-des'-se* and *Il-mah'-we*, occupying the deep canyon of Pit River from the middle of the loop south of Chalk Mountain, upstream to near the mouth of Burney Creek, just west of Pecks Bridge. The ruling village (of same name) was on the north side of Pit River at the junction of Screwdriver Creek, 6 or 7 miles below Pecks Bridge. On the north they apparently reached the mountains 4 or 5 miles southeast of Bartles, but the exact northern limit is unknown. On the south they occupied the whole of Goose Valley, reaching within a mile or two of the small settlement of Burney. The Goose Valley band (*E-tsah'-tah-iss*, also called *Chah-wahs'-te-chan-ni'-che* by the *Mo-des'-se*) is hemmed in both east and west by lofty ridges, while on the north the deep canyon of Pit River renders communication with the main body of the tribe difficult.

They were in contact with 4 tribes: on the west, the *Mo-des'-se;* on the northwest for a short distance, the *O-kwah'-noo-tsoo;* on the north and east, the *Il-mah'-we;* on the south, the Burney Valley branch of *At'-soo-kā'-e*. Their territory is in the main forested.

NAMES USED FOR TO-MAL-LIN'-CHE-MOI' BY OTHER TRIBES

NAME	TRIBE USING NAME
E-chat'-tah-we.—Band in Goose Valley	*Á-choo'-mah'-we*
E-tsah'-tah-iss and *Chah-wahs-te' chan-ni'-che.*—Band in Goose Valley	*Mo-des'-se*
Oo'-we-che'-nah.—Band in Goose Valley	*At-soo-kā'-e*
To-mal-lin'-che-moi'	*Mo-des'-se*

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THE IL-MAH'-WE[1] TRIBE

PLATES 5-7

The *Il-mah'-we* occupied a rather narrow strip between the *To-mal-lin'-che-moi'* on the west and the *A-choo'-mah'-we* on the east. On Pit River their territory extended only from near the mouth of Burney Creek just west of Pecks Bridge, upstream to the falls on Pit River, about 3 miles below Fall River Mills. On the north it included Cayton Valley and is said to have reached Bear Mountain; on the south it embraced about 4 miles of the lower course of Hat Creek, stopping abruptly on an east-west line crossing Hat Creek about midway between Carbon and Cassel postoffice, where it abutted against the northern boundary of the *At'-soo-kā'-e*.

Their country is called *Il-mah';* their people, *Il-mah'-we;* their language, *Il-mā'-wah.*

The ruling village, *Il-mah',* long since destroyed, occupied both sides of the river at the site of Pecks Bridge. Another village, *Wen'-ne-hah'-le,* was in the canyon at the falls three miles below the mouth of Fall River; and still another, *Mah-pe'-dah-dā',* at the junction of Salmon Creek with Pit River.

The *Mo-des'-se* tell me that the *Il-mah'-we* were formerly the dominant tribe on Pit River.

Their territory, like that of the adjoining *To-mal-lin'-che-moi'* was mainly forested.

The *Il-mah'-we* were in contact with four tribes: the *To-mal-lin'-che-moi'* on the west; the *O-kwahn'-noo-tsoo* on the northwest; the *A-choo'-mah'-we* on the north and east; the *At'-soo-kā'-e* on the south.

NAMES USED FOR IL-MAH'-WE BY OTHER TRIBES

NAME	TRIBE USING NAME
Il-mah'-we	*Mo-des'-se, At-wum'-we* and *A-choo'-mah'-we*
Po-mah-re'-ye	*At'-soo-kā'-e* and *Ap-woo'-ro-kā'e*
Too-hat'-mah (slurred *Hat'-mah*).—Band in Cayton Valley	*Mo-des'-se* and *A-choo'-mah'-we*

[1] The name was written *Illmawees* by Stephen Powers in 1874 (*Overland Monthly,* Vol. 12, pp. 412-415, May, 1874); spelling changed in his *Tribes of California,* 1877, to *Il-mâ-wi* (p. 267, 1877), and adopted by Mooney in *14th Ann. Rept. Bur. Eth.* (for 1892-1893), p. 1052, 1896. [Mention only.]

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THE Ă-CHOO'-MAH'-WE TRIBE

PLATE 8.

The *Ă-choo'-mah'-we* occupy a considerable extent of country east of the *Il-mah'-we,* their territory comprising the drainage basins of White Horse Valley, Fall River Valley, and Pit River from the south end of Big Valley Mountains westerly to Pit River falls, 3 miles below Fall River Mills. On the north they claim part of the Lava Beds country and the southern parts of Medicine Lake and Glass Mt., in which region many battles were had with their enemy the Modok.

Their western boundary crosses Pit River directly south of Saddle Mt., from which it runs northwesterly to Fort Mt. (known also as Soldier Mt.) and thence northerly and northwesterly to Bear Mt. and the territory of the Modok.

The eastern boundary runs from Glass Mt. southerly to Buck Butte and Round Mt.; thence southeasterly along the low divide between White Horse Valley and Egg Lake marsh, south of which it follows the summit of Big Valley Mountains to the western edge of Muck Valley.

The southern boundary extends from Conrad Lake to a point a mile or a mile and a half north of Bald Mt. and thence northeasterly to the west side of Muck Valley.

The larger part of their domain is a broad open flat-bottom valley interrupted by low volcanic buttes and ridges, well watered and grass covered on the south but continuing northward into the arid region of the Lava Beds.

North of Pit River both eastern and western borders are forested with Ponderosa pines and other trees; south of Pit River the land is partly forested and partly open.

The largest town in their territory is Fall River Mills (or 'City'); smaller settlements are Pittsville, McArthur, Glenburn, and Dana.

The *Ă-choo'-mah'-we* are in contact with six tribes: the *Il-mah'-we* and *O-kwahn'-noo-tsoo* on the west; the *Modok* on the north; the *At-wum'-we* on the east; the *Ap-woo'-ro-kā'e* and *At-soo-kā'-e* on the south.

FORMER Ă-CHOO'-MAH'-WE VILLAGES

The rancheries of the Ă-choo'mah'-we tribe were located along the courses of Pit River and Fall River; most of them were of small size.

Bi'-yu-mah.—At site of McArthur.

Dā-lahs'-te.—On lower part of Fall River at site of first house north of Intake.

Daw^{oh}-tah'-pit.—On south side Pit River about 2 miles below Fall River mouth.

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Dē'-el mach'-mah (or *Ēl-mach-mah*).—At Intake of Pacific Gas & Electric Co. on Fall River near Fall River Mills.
Dis-naht'-chah.—On both sides Pit River between Fall River and McArthur.
In'-ju-tā-ew'.—At present Fall River Mills, at junction of Fall River with Pit River. Old house holes may still be seen.
Joo'-wahl-oo'.—On Pit River at site of Pittville.
Lo'-kah-le.—On south side Pit River opposite McArthur.
Nahn-chah-me'-nah.—[Not located.]
Paht-to'-mah.—On Fall River above *Dā-lahs'-te* (toward Dana).
Sok'-too-wah'-dā.—On Fall River above *Paht-to'-mah.*
Soo-kă'-mah.—[Not located.]

NAMES USED BY Ă-CHOO'-MAH'-WE FOR THEMSELVES AND OTHER TRIBES AND BANDS

Related tribes and bands:

Ă-choo'-mah'-we, Ă-ju'-mah'-we or *Ah-choo-mah'-we'-che.*—Their name for their own tribe.....[*Ă-choo'-mah'-we*]
Ah'-mit'-che and *Kaw-le-wah.*—Dixie Valley tribe.....[*Ap-woo'-ro-kāe'*]
As'-stah-ke'-wah. Tribe in Hot Springs or Canby Valley..[*As-tah-ke-wi'-che*]
At'-to-maw'-wah.—Band in Grasshopper Valley just north of Eagle Lake .....[band of *Ap-woo'-ro-kā'e*]
At-wum'-chan'-ne and *E-tah'-me.*—Big Valley tribe.....[*At-wum'-we*]
At-wum'-noo-che, Had'-de-we'-we and *To-ah-no'-che.*—Hat Creek tribe... [*At-soo-kā'-e*]
E-chat'-tah-we.—Band in Goose Valley just north of Burney..... [band of *To-mal-lin'-che-moi'*]
E-tah'-me.—Tribe in Big Valley, Lassen County.....[*At-wum'-we*]
Also, nickname for *Mo-des-se*
Had'-de-we'-we, At-wum'-noo-che and *To-ah-no'-che.*—Hat Creek tribe.. [*At-soo-kā'-e*]
Hā'-we-si'-too.—Tribe between Alturas and Goose Lake.....[*Hā-we-si'-doo*]
Il-mah'-we.—Pit River tribe next below the Ă-ju'-mah'-we.....[*Il-mah'-we*]
Kaw-le-wah and *Ah-mit'-che.*—Dixie Valley tribe.....[*Ap-woo'-ro-kāe*]
Ko'sal-lek'-te.—Band at Alturas .....[*Ko'-se-al-lek'-tĕ*]
Mah-dā'-se.—Tribe at Big Bend Pit River.....[*Mo-des'-se*]
To-ah-no'-che.—Hat Creek tribe.....[*At-soo-kā'-e*]
Too-hat'-mah or *Hat'-mah.*—Cayton Valley band of *Il-mah'-we.*

Unrelated tribes and bands:

Ah-poo'-e.—Tribe in Surprise Valley.....[*Northern Piute.*]
Al-lah'-me.—Klamath Lake tribe.....["In *Yan-nox* country"]
Bug-gah'-mah-le and *Puk-kah'-mah.*—Tribe in Big Meadows..... [*No'-to-koi'-yo Midoo*]
Ek-pe'-me.—McCloud River Wintoon.....[*Northern Wintoon*]
Loo'-too-am'-me.—Tribe of Tule Lake and northern part of Goose Lake.. [*Modok*]
Puk-kah'-mah and *Bug-gah'-mah-le.*—Tribe in Big Meadows..... [*No'-to-koi'-yo Midoo*]
Sas'-te'-che.—Name for both *Sas'-te* (*Shas'-te*) and *O-kwahn'-noo-tsoo'.*
Te'-si-che.—Tribe from Round Mt. south.....[*Yah'-nah* or *Nōs'-se*]

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NAMES USED FOR Ă-CHOO'-MAH'-WE BY OTHER TRIBES

NAME	TRIBE USING NAME
Ă-choo'-mah'-we, Ah'-choo-mow'-we, and *Hă'-wis-aht'-wum-we*	*Mo-des'-se* and *Ham-mah'-we*
Ă-ju'-mah'-we	*As'-tah-ke-wi'-che* and *At-wum'-we*
Ă-ju'-mah-we and *Ham-mow-ēs'*	*At-wum'-we*
Too'-e-chow'-we; Too'-e-tsow'-we; Te-tsow'-we	*Ap-woo'-ro-kă'e* and *At'-soo-kă'-e*

GEOGRAPHIC NAMES USED BY THE Ă-CHOO'-MAH-WE

Bald Mt. seven miles south of Fall River Mills	Pak'-kă-mah' [E-pak-kă-mah'?]
Big Valley	To-tă'-me
Big Valley Mts. between Fall River Valley and Big Valley	Tă'-wahl'-me
Burney Butte	Ah-po'-hah
Cayton Valley west of Fall River Valley	Too-hat'-mah
Crater Peak (may include McGee Peak), between Mt. Lassen and Burney Butte	Yă-te'-chah-lah
Dixie Valley	Am-mē't
Fall River	Ah-choo'-mah'
Fall River Valley, the broad middle part	Ah-cho-mo-de-kah-te
Rancheria site in lower northwest part of Fall River City	Te'-kah-te
Fort Crook at northeast base of Fort (or Soldier) Mt.	Soolt'-mah
Goose Valley just north of Burney	Chă'-tah
Grasshopper Valley north of Eagle Lake	At'-too-maw'-wah'
Hat Creek	Hat'-te we'-oo'
Hoffman, Mount	Tahs-se'-wah
Klamath Lakes country	Yan'-nox
Lassen Peak	Yet'-te'-chă-nah
McCloud River	E-chah'-tah
Medicine Lake	Saht
Modok country, Tule Lake to Goose Lake	Loo'-too-am
Mountain (small isolated mountain or high hill) south of Saddle Mt. on south side Pit River southwest of Fall River City	Chah'-chek'-kel
Pine Creek	Am-mook'-mah
Pit River	Ă-ju'-mah ă-chim and E-le-mah'
Poison Lake	As-sit'
Saddle Mt. just south of Soldier Mt. and northwest of Fall River City (the north hump)	Tah'-mah'-mootch'
The southern hump	Ah-pah-tă'-me
Salmon Creek	Mah-pe'-dah-dă'
Shasta, Mount	Yet'
Soldier Mt. ('Fort Mt.') just west of Fort Crook	Sim'-lōk
South Fork Pit River	Ham'-mah-de'-kah

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THE AT-WUM'-WE TRIBE

PLATES 9-12

The *At-wum'-we* occupy an extensive desert area known as Big Valley, on the east side of the northern Sierra Nevada, between the related *Ā-choo'-mah'-we* on the west and the *As-tah-ke-wī'-che* and *Ham-mah'-we* on the east. Their territory is larger than that of any of the other Pit River tribes, extending from Medicine Lake and Glass Mountain southerly to Hayden Hill and the headwaters of Ash Creek, and in a west-east direction from Big Valley Mountains and the low divide east of White Horse Reservoir easterly to Scheffer Mountain, Cottonwood Creek, and Upper Ash Creek, including Round Valley and the drainage area of Rush Creek northeast of Adin. This area except along the streams is an arid or semi-arid desert plain comprising Big Valley and a part of the Lava Beds, bordered by strips of forest in the mountains. [See also pp. 12-14.]

The western boundary—the line separating them from the *Ā-choo'-mah'-we*—begins at Glass Mountain on the north, runs southerly and southeasterly to Big Valley Mountains, which range it follows south to Muck Valley in the great southern loop of Pit River. The southern boundary is almost a straight line running east from Muck Valley to Hayden Hill, where it turns abruptly to the southeast to enclose the headwaters of Ash Creek. The eastern boundary starts from a point just north of Mowitz Butte and runs directly south for about 22 miles to Stone Coal Valley on Pit River, where it bends to the southeast to enclose the upper waters of Ash Creek.

In Big Valley proper the *At-wum'-we* had only one permanent winter village. Its name was *Ah-pe'-dah-dā* and it was located on Ash Creek between Adin and Lookout.

The *At-wum'-we* band in Ash Creek Valley is called *Ko-sel-lat'-to-mah* by themselves, and *Dah-bo'^{ch}-e* by the *Ham-mah'-we* and *Mo-des'-se*. It is separated from the *Ham-mah'-we* by the ridge or divide between Ash Creek and South Fork Pit River.

The *At-wum'-we* band in Round Valley, northeast of Adin, is called *Se-te'-wah*.

The white settlements within their area are Bieber, Adin, and Lookout.

The *At-wum'-we* are in contact with five tribes: the *Ā-choo'-mah'-we* on the west; the *Modok* on the north; the *As-tah-ke-wī'-che* and *Ham-mah'-we* on the east; the *Ap-woo'-ro-kā'e* on the south.

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NAMES USED BY AT-WUM'-WE FOR THEMSELVES AND OTHER TRIBES

Related tribes:

Ah-pe'-dah-dă' (*Yah-pe'-dah-dă*).—Principal village and land of *At-wum'-we*, located on Ash Creek in Big Valley, 7 miles west of Adin.

A-ju'-mah'-we and *Ham-mow-ēs'*.—Fall River tribe.....*A-choo'-mah'-we*

A-mits'-che (*Ah-mitch'-e*).—Dixie Valley tribe.....*Ap-woo'-ro-kā'e*

Ah-lahm'-se-ge.—Northeastern band of *Hă'-we-sī'-doo* (east of southern part of Goose Lake)

As-tah'-re'-wi'-ge.—Hot Springs or Canby Valley tribe.....*As-tah-ke-wi'-che*

At-wum'-we'.—Their name for their own tribe.....*At-wum'-we*

Chah'-lahk-se.—*Hă'-we-sī'-doo* band at west base of Cedar Mt., 11 miles ENE of Alturas.....*Chah'-lahk-se*

Dal-mo'-mi-che (*Dal-mo'-mah, Tal-mo'-mah*).—*Ko'-se-al-lek'-te* band at Essex Hot Spring 10 miles west of Alturas.....*Dal-mo'-mi-che*

Doo'-me-lit' (*Too'-me-lit'*).—*Ko'-se-al-lek'-te* village about 3 miles southwest of Alturas.....*Doo'-me-lit'*

Had'-de-we'-we and *Hat'-te-we'-we es.*—Hat Creek tribe.....*At-soo-kā'-e*

Ham-mah'-we.—Likely Valley tribe.....*Ham-mah'-we*

Ham-mow-ēs' and *A-ju'-mah'-we.*—Fall River tribe.....*A-choo'-mah'-we*

Ho-mă'-wet.—*Ko'-se-al-lek'-te* village and band about 6 miles NNE of Alturas.....*Ho-mă'-wet*

Il-mah'-we.—Pit River tribe below Fall River Mills.....*Il-mah'-we*

Ko'-sah-lek'-tah.—Tribe at Alturas, reaching north about 8 miles, and south 6 miles.....*Ko'-se-al-lek'-tē*

Ko'-sel-lat'-to-mah.—*At-wum'-we* band in Ash Creek Valley.....*Ko'-sel-lat'-to-mah*

Mo-des'-se.—Tribe at Big Bend Pit River.....*Mo-des'-se*

Se-te'-wah.—*At-wum'-we* band in Round Valley (northeast of Adin)...*Se-te'-wah*

Unrelated tribes:

Ah-poo'-e (*A-poo'-e*).—*Northern Piute* of Fort Bidwell region.

Ek-pe'-me.—Wintoon of west side Pit River opposite mouth of Montgomery Creek.....*Northern Wintoon*

Kă-bă'-mah-le and Pă-kah'-mah'-le.—Big Meadows tribe..*No-to-koi'-yo Midoo*

Loo'-too-ah'-me (*Loot-wah'-me*).—Modok-Klamath (collectively).

Te'-si-che.—Tribe in Round Mt. region.....*Yah'-nah* or *Nŏs'-se*

NAMES USED FOR AT-WUM'-WE BY OTHER TRIBES

NAME	TRIBE USING NAME
Ahk-koo'-e	*At-soo-kā'-e*
Ah-ko-we'-e'; Ahk-we''	*Ap-woo'-ro-kā'e*
At-wum'-chan'-ne	*A-choo'-mah'-we*
At-wum'-zan'-ne	*Ham-mah'-we*
At-wum'-we	*As-tah-ke-wi'-che*

Dah-bŏ^{ch}-e.—Band in Ash Creek Valley.....*Mo-des'-se*

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E-tah'-me ..... *Ă-choo'-mah'-we* and *Ham-mah'-we*
Ham'-mă-o-ket'-tal-le; To-tă'-o-me; Too-tă'-o-mal'-le .. *Mo-des'-se*
Tō-bŭch-we.—Band in Ash Creek Valley ..... *Ham-mah'-we*

GEOGRAPHIC NAMES USED BY THE AT-WUM'-WE

Adin ..... *Til'-le-nah-ge'*
Bald Mt. ..... *E-pah'-goo-mah*
Big Valley ("our valley") ..... *At-wum'*
Big Valley Mountains ..... *Til-lok'-lok e-doo'-lin* and *Too-woos'-tah-tse*
Dixie Valley ..... *Ah-mit'*
Grasshopper Valley ..... *At-o-maw'-wah*
Hat Creek ..... *Hat'-te we'-we*
Hayden Hill ..... *Tsah-mă'-heu* (old original name)
Hayden Hill ..... *De-tse-lag-gă doo-we-ĕt* (new name)
Hoffman, Mount ..... *Tahs'-se'-wah*
Lassen Volcano ..... *E-te'-chan'-nah*
Madeline Plains ..... *Sel'-lat-um'*
Medicine Lake ..... *Saht'* [obsidian]
Muck Valley pond ..... *Ah'-te-ke*
Pit River ..... *A-ju'-mah*
Round Valley (just northeast of Adin) ..... *Sow'-we sop'-te*
Shasta, Mount ..... *Yet*
South Fork Pit River ..... *Ham-mow'-tă-kaht'*
Willow Creek (east side Hayden Hill to Big Val.) .. *Tsah'-he-se*

THE AS-TAH-KE-WI'-CHE TRIBE

PLATES 13-15

The *As-tah-ke-wi'-che* territory lies between that of the related *At-wum'-we* on the west and *Hă-we-si'-doo* and *Ko'-se-al-lek'-te* on the east, extending from a little north of Mowitz Butte and Timbered Mt. southerly to Stone Coal Valley, Scheffer Mt., and the ridge running from Scheffer Mt. easterly to the valley of South Fork Pit River, which it approaches at a point nearly opposite Signal Butte.

The center of population was in Hot Springs or Canby Valley and its eastern extension to old Centerville, thus enclosing O-pah'-wah Butte (formerly called Centerville Butte and Rattlesnake Butte). The As-tah-ke-wi'-che were helpful to our troops at the time of the Modok war and were promised (by General Crook) an area 20 or 25 miles square around O-pah'-wah Butte—which of course was never given them.

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Villages of the As'-tah-ke-wĭ'-che.—There were two permanent villages: *As'-tah-re'-wah,* on the knoll at Hot Spring 3 miles east of Canby; and *Han-too'* (or *Han-teu'*) in Stone Coal Valley.

The *As-tah-ke-wĭ'-che* were in contact with five tribes: the *At-wum'-we* on the west; the *Modok* on the north; the *Hā'-we-sĭ'-doo* and *Ko'-se-al-lek-tĕ* on the east; the *Ham-mah'-we* on the south.

NAMES USED BY AS-TAH-KE-WI'-CHE FOR THEMSELVES AND OTHER TRIBES

Related tribes:

A-ju'-mah'-we.—Fall River tribe.....[*A-choo'-mah'-we*]
A-mitch'-e.—Dixie valley tribe.....[*Ap-woo'-ro-kā'e*]
As-tah-re-wĭ'-se (*As-tah-ke-wĭ'-se*).—Their name for their own tribe....
[*As-tah-ke-wĭ'-che*]
At-wum'-jen'-ne.—Likely Valley tribe, on South Fork Pit River, reaching east to mountains and south to Madeline Plains. Talk same as *As-tah-ke-wĭ'-che* .....[*Ham-mah'-we*]
At-wum'-we.—Big Valley tribe.....[*At-wum'-we*]
De-baw'-kĕ-e.—Ash Creek Valley band of At-wum'-we.....[*De-baw'-kĕ-e*]
Ham-mah'-we.—Likely Valley tribe.....[*Ham-mah'-we*]
Han-too'.—As'-tah-ke-wi'-che band in Stone Coal Valley on Pit River....
[*Han-too'*]
Hat'-te-we'-we (*Had'-de-wi'-we*).—Hat Creek tribe.....[*At-soo-kā'-e*]
Hā-we-sā'-doo (*Hā-we-sĭ'-doo*).—Next tribe on the east, between our tribe and the Piute, reaching north on east side Goose Lake to Willow Ranch near mouth of Fandango Creek.....[*Hā-we-sĭ'-doo*]
Ko'-se-al-lek'-te (*Ko-sal-lek'-tah*).—Tribe on Alturas Plain.[*Ko'-se-al-lek'-te*]
Mă-too-tsā'.—Band on southwest side of Goose Lake between our tribe and *Modok* .....[Band of *Hā-we-sĭ'-doo*]
Mo-des'-se.—Tribe at Big Bend Pit River.....[*Mo-des'-se*]

Unrelated tribes:

Al-lah'-me.—Klamath Lakes tribe.
A-poo'-e.—*Piute* tribe.
Kah-bah'-mah'-le.—*No-to-koĭ'-yo* tribe of Big Meadows (now Lake Almanor).
Loo'-too-ah'-me.—*Modok* tribe.

NAMES USED FOR AS-TAH-KE-WI'-CHE BY OTHER TRIBES

NAME	TRIBE USING NAME
Ah-stah'-ke'-wĭ'-che	*A-choo'-mah'-we*
As-tah-ke'-wah, As-tah-pe'-wah, and *Han-too'-che*	*Mo-des'-se*
As'-tah-ke'-watch and *As'-tah-kah-we-zo'*	*Ham-mah'-we*
As'-stah-ke-wah	*A-choo'-mah'-we* and *Ap-woo'-ro-kā'e*
As-tah'-re'-wi-ge	*At-wum'-we*

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GEOGRAPHIC NAMES USED BY AS-TAH-KE-WĪ'-CHE TRIBE

Alturas Plain ..... Ko'-se-al-lek'-tah
Ash Creek Valley (belongs to At-wum'-we) ..... De-baw'-kĕ'-ĕ
Big Valley ..... At'-wum'
Centerville or Rattlesnake Butte, about 8 miles east of Canby [name now changed by Govt. Geog. Board to Opahwah] ..... O-pah'-wah
Forested mountains between Canby and Big Valley ..... Hal-le'-wit
Hot Springs or Warm Springs Valley (Canby Valley) .... Ah'-stah-re'-wah; As'-tah-ke'-wah
Little Hat Creek ..... Tal'-le-mo'-mah
Mountains south of Canby Valley ..... Del-ah'-ko
Pit River ..... A-ju'-mah
Round Valley, immediately northeast of Adin (belongs to *At-wum'-we* of Big Valley) ..... Se-te'-wah
South Fork Pit River ..... Tol-lok'-ko'-be
Warner Mountains, between Alturas and Surprise Valley (especially Eagle Peak) ..... Wah'-dahk-cho'-se

THE HA-WE-SĪ'-DOO TRIBE

The *Hă'-we-sī'-doo* held the country on both sides of the southern part of Goose Lake and thence southward to the northern part of Alturas Plain, about 8 miles north of Alturas; and from Ingalls Swamp and Mill Spring on the west to the summit of Warner Mountains on the east.[1] From Goose Lake easterly the intertribal line between themselves and the Piute started from or near Willow Ranch[2] on the shore of the lake and followed up Fandango Creek 5 or 6 miles, continuing easterly to Fandango Valley, where several battles with the Piute were fought.

From Fandango Valley southward to Cedar Peak the eastern boundary follows the crest of Warner Range. The southern boundary is a nearly straight line from Big Sage Reservoir to Cedar Peak.

Their territory is mainly an open desert plain dotted in the hills with junipers and mountain mahogany. Their principal rancheria was on the mesa 8 or 10 miles north of Alturas.

VILLAGES OF THE HĂ'-WE-SI'-DOO

Ah-lahm'-se-ge.—On east side of southern part of Goose Lake between Sugar Hill and Davis Creek.

Chah'-lahk-se.—At or near west base of Cedar Mountain, about 11 miles northeast of Alturas.

[1] The name of the band on the east side of Goose Lake is *Ah-lahm'-se-ge;* that of the band on the west side is *Mă-too-tsă'*.

[2] Some members of the tribe say that the line was at Sugar Hill, 5 or 6 miles south of Willow Ranch.

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Hā-we-sĭ'-doo.—On the mesa about 10 miles north of Alturas. The ruling village, from which the tribe took its name.

Mă-too-tsā'.—On west side of southern part of Goose Lake, about 14 miles north of Alturas.

Adjoining tribes.—The *Hā'-we-sĭ'-doo* were in contact with four tribes: the *As'-tah-ke-wĭ'-che* on the west; the *Modok* on the north: the *Northern Piute* on the northeast and east; the *Ko'-se-al-lek'tĕ* on the south.

THE KO'-SE-AL-LEK'-TE TRIBE

PLATES 16 AND 17

The *Ko'-se-al-lek'-tĕ* are a small tribe centering on the Alturas Plain and reaching easterly to the crest of the Warner Mountains. Their territory, nearly square in outline, is sandwiched in between that of the *Hā-we-sĭ'-doo* on the north and the *Ham-mah'-we* on the south. Their northern boundary extends easterly from Big Sage Reservoir to Cedar Mountain (or perhaps the adjacent Bald Mt., called Cedar Mt. on some maps); the eastern boundary follows the summit of Warner Range from Cedar Mt. to Warren Peak (called Buck Mt. on some maps); the southern boundary is a straight line from Warren Peak to Signal Butte on South Fork Pit River (4 miles north of the mouth of Fitzhugh Creek) and continues westerly for 10 or 12 miles; the western boundary, apparently, is a north-south line from Big Sage Reservoir southward, passing a little west of Essex Hot Spring and continuing to intersect the latitude of Signal Butte. It thus includes the treeless desert region of Rattlesnake Creek, valuable stretches of upper Pit River and the lower part of South Fork Pit, together with the several streams that flow westerly from Warner Range to South Fork Pit River.[1]

KO'-SE-AL-LEK'-TĔ VILLAGES AND BANDS

Del'-mo-mĭ'-che or *Tal'-mo-mĭ'-che* band (village *Del-mo'-mah*).—At Essex Hot Springs 10 miles west of Alturas; westernmost band of the Ko'-se-al-lek'-tĕ.

Ham-mah'-le-lah'-pe.—Village and band on Pine Creek near mouth of canyon where creek comes out from Warren Peak of Warner Range. The territory of this band adjoins on the south that of the Ham-mah'-we.

Ho-mā'-wet.—Village and band at foot of Warner Range about 6 miles NNE of Alturas.

Ko'-se-al-lek'-tah.—Ruling band; village on site now occupied by Alturas.

Too'-me-lit or *Doo'-me-lit.*—Village and band about 3 miles SW of Alturas.

[1] I have been reluctant to accord tribal rank to such small divisions as those of the *Hā'-we-sĭ'-doo* and *Ko'-se-al-lek'-te*, but since the adjacent related tribes call them 'tribes' and refuse to regard them as a part of themselves, and since each comprised a number of villages, no other course seems open.

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THE HAM-MAH'-WE TRIBE

PLATES 18-21

The *Ham-mah'-we, Ko'-se-al-lek'-te* and *Hā'-we-si'-doo* are the easternmost of the Pit River tribes. They form a north-south series, one above another, from Madeline Plains to Goose Lake, and on the east all three abut against the Northern Piute. All three reach the crest of the Warner Mountains but owing to the slightly easterly trend of the southern part of the range, the *Ham-mah'-we* attain a longitude a trifle nearer the rising sun than do either of their more northern neighbors.

The territory of the *Ham-mah'-we* lies between that of the *At-wum'-we* and *Ap-woo'-ro-kāe* on the west and the *Northern Piute* on the east. It is broadest at the north, narrowing rapidly to the south.

The northern boundary is a remarkably straight line 35 miles in length, running nearly due east from Scheffer Mountain to Warren Peak (known also as Buck Mountain, altitude 9700 ft.), crossing South Fork Pit River at Signal Butte about 4 miles north of the junction of Fitzhugh Creek with South Fork Pit River, midway between Likely and Alturas. The western boundary runs southeasterly from Scheffer Mountain (or perhaps from Stone Coal Valley west of Scheffer Mountain) following the divide east of Cottonwood and Ash Creeks, and thence south to the east side of Grasshopper Valley.

The eastern boundary follows the crest of Warner Mountains from Warren Peak southward to the end of the range, beyond which it curves to the southwest between Cedar Creek and Red Rock Valley, continuing apparently to McDonald Peak and thence southwesterly to the end of Fredonyer Mts. south of Madeline Plains.

The main part of the territory of the *Ham-mah'-we* is a broad open plain bisected by the marshy valley of South Fork Pit River and known as Likely Valley. It includes Madeline Plains on the south, and Jess and West Creek valleys on the east. It is limited on the west by the hills west of Madeline Plains and on the east by the divide between Cedar Creek and Red Rock Creek—Red Rock Valley belonging to the *Piute*.

The *Ham-mah'-we* are in contact with four tribes: the closely related *As-tah-ke-wī'-che* and *Ko'-se-al-lek'-te* on the north; the *At-wum'-we* and *Ap-woo'-ro-kā'e* on the west and southwest; the *Northern* Piute on the east and southeast.

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FORMER PERMANENT (WINTER) VILLAGES OF THE HAM-MAH'-WE

Bo'-yah.—In Jess Valley.

Sah-lah'-wit.—In West Creek Valley.

Tat'-nah-hōm'-zah.—On Fitzhugh Creek near its junction with South Fork Pit River.

Til-luk-ko'-be (*Tul-luk-ko'-be*).—In Likely Valley near present settlement of Likely.

NAMES USED BY THE HAM-MAH'-WE FOR THEMSELVES AND OTHER TRIBES AND BANDS

Related tribes and bands:

A-choo'-mah'-we.—Fall River Valley tribe..... [*A-choo'-mah'-we*]

Ah-mitch'-e (*Ah-mit'-se" Ah'-mit*).—Dixie Valley and Eagle Lake tribe..... [*Ap-woo'-ro-kă'e*]

As'-tah-ke'-watch, As-tah-re'-wah and *As-tah-kah-we-zo'.*—Hot Springs or Canby Valley tribe.... [*As-tah-ke-wĭ'-che*]

At-wum'-zan'-ne.—Big Valley tribe..... [*At-wum'-we*]

Chah'-lahk'-se.—Hă-we-si'-doo Band 11 miles NNE of Alturas ..... [*Chah'-lahk-se*]

Del-mo'-mah.—Band between Alturas and Canby Valley ..... [Band of *Ko'-se-al-lek'-tĕ*]

E-tah'-me.—Another name for Big Valley tribe.... [*At-wum'-we*]

Hah-dik'-yu'-we.—Hat Creek tribe..... [*At-soo-kă'-e*]

Ham-mah'-le-lah'-pe.—Band of Ko-se-al-lek'-tĕ on Pine Creek ..... [*Ham-mah'-le-lah'-pe*]

Ham-mah'-we.—Their name for their own tribe; used also by related tribes. Also called *Tul-lok-ko'-be* or *Do-lu-ko'-be,* the name of So. Fork Pit River..... [*Ham-mah'-we*]

Hă-we-si'-doo.—Tribe extending from Goose Lake south to about 8 miles north of Alturas..... [*Hă-we-si'-doo*]

Ko'-să-lek'-tah.—Tribe on Alturas Plain..... [*Ko'-se-al-lek'-tĕ*]

Pat'-yu-lo'-mit.—Ham-mah'-we bands in West Creek and Jess Valleys..... [*Pat-yu-lo'-mit*]

Tŏ-bŭ'^{oh}-we, Dah-bo^{oh}-e or *Bah-bo^{ch}-e.*—Ash Creek band of *At-wum'-we* ..... [*Dah-bo^{ch}-e*]

Unrelated tribes:

Ah-poo'-e.—Tribe in and east of Surprise Valley ..... [*Northern Piute*]

Loo'-too-ah'-me (*Loot-wah'-me*).—Tribes north of Pit River tribes..... [*Modok* and *Klamath,* collectively]

Pah-kah'-mah-le'.—Big Meadows Midoo... [*No-to-koĭ'-yo Mĭ'-doo*]

NAMES USED FOR HAM-MAH'-WE BY OTHER TRIBES

NAME	TRIBE USING NAME
As-pe-se' and *Ah-pis'-se-ye*	*Ap-woo'-ro-kă'e*
At-wum-chan'-ne and *Ham-mah'-we*	*Mo-des'-se*
At-wum'-jen'-ne and *Ham-mah'-we*.....	*As'-tah-ke-wĭ'-che*
Ham-mah'-we	*At-wum'-we* and *As-tah-ke-wĭ'-che*

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GEOGRAPHIC NAMES USED BY THE HAM-MAH'-WE

Crooks Canyon, west of Likely..... Soo'-dah pe-dā'-ge
Blue Lake three miles south of Jess Valley and five east of forks of West Creek..... Tes-ahp'-te
Eagle Lake ..... As-soo-soo' kah'-te
Eagle Peak of Warner Range..... Wah'-dok-tsoo'-ge
Fitzhugh Creek nine miles north of Likely..... Tan'-nō-hum'-jah
Small hill south of Fitzhugh Creek..... Yah^{ch}-poo'-mah
Grasshopper Valley ..... At'-too-um-wah'
Horse Lake ..... Tahs'-te at'-wum (slurred, Tahs-taht'-wum)
Hot Spring on South Fork Pit River east of Likely ..... Te'-mah kahtch'-hit
Indian Reservation about four miles southeast of Likely ..... Choo-loo'-ko'-pe
Lava hills (sagebrush and juniper) south of Indian Reservation ..... Ko-pah'-ko
Pointed peak south of Reservation..... Ten'-ne-heu'-it
Likely Valley ..... Doo-loo'-ko'-be
Madeline Plains ..... Sel-lat'-too-um
Sagebrush Hole or Basin..... Pah'-tah lahts ah'-mit
Signal Butte two miles north Fitzhugh Creek.. San-kow'-jā
Snowstorm Mt. on Piute-Hammahwe boundary (probably McDonald Peak)..... Choos'-leu ah'-ko
South Fork Pit River..... Dō-lŭ'-ko'-be; Doo-loo'-ko'-be; or Tŭ-lo-ko'-be
Warren Peak, locally called Buck Mt..... Tahk'-tah-gā'-wah
Small butte at east base Warren Peak..... Itch'-it

THE ATSOOKĀ'-AN FAMILY

The *Atsookā'-an* family comprises only two tribes: the *At-soo-kā'-e,* known as the Hat Creek tribe, and the *Ap-woo'-ro-kā'e,* known as the Dixie Valley tribe. Heretofore they have been classed among the Pit River tribes, but their language, as pointed out by Dixon and confirmed by my much fuller vocabularies, is widely different.

The area they occupy lies immediately south of that of the Pit River tribes (*Achomah'-an* Family), extending from a point about 8 miles east of the settlement of Montgomery Creek, easterly to Hayden Hill, the Fredonyer Mountains (between Eagle and Horse Lakes), and the divide east of Willow Creek Valley. In a north-south direction they reach from about a mile north of Cassel on Hat Creek south to Lassen Volcano, and farther east from Hayden Hill to the divide south of Eagle Lake. Their territory in an east-west direction measures about 65 miles; in a north-south direction, in the widest part, about 35 miles.

The boundary between the two tribes has been located for me by old Indians of both tribes in exactly the same way.

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THE AT-SOO-KĀ'-E TRIBE

PLATES 22 AND 23

The *At-soo-kā'-e,* or Hat Creek tribe, inhabit the country north of Mt. Lassen from Lassen Peak to a mile or a mile and a half north of Cassel postoffice.

The northern boundary, beginning at the southwest corner of Goose Valley, runs easterly for about 4 miles (skirting the south edge of this valley a little more than a mile north of the latitude of Burney) and then turns north to Lookout Mountain (a peak in the ridge between Goose and Burney Valleys 4¼ miles north of Burney postoffice) where it bends abruptly east, following apparently a straight line for 16 miles to the pass between Bald Mountain and the hill immediately north of it, whence it turns abruptly southeast, becoming the eastern boundary and continuing in the same direction in a straight line for 19 or 20 miles to the east side of Grass Valley, where it changes to southwest, passing Poison Lake and reaching the lava mountains about 12 miles east of Lassen Peak. The western boundary, from the headwaters of Montgomery Creek, runs southerly along the crest of the northern Sierra Nevada for about 10 miles to Snow Mountain, where it turns southeast and continues for about 24 miles, by way of the west side of Bunch Grass Valley and Noble Pass, to Lassen Peak.

The territory of the *At-soo-kā'-e* thus includes the greater part of Burney Valley, the whole of Burney Butte, Tamarack, McGee and Crater Peaks, Bald Mountain on the northeast, Bunch Grass Valley on the west, Grass Valley on the east, the entire drainage basins of Lost Creek and of Burney and Hat Creeks except a few miles of their lower courses near Pit River, a multitude of small lakes, and the tremendous lava ridges that spread northerly from Mt. Lassen.

It is an exceedingly mountainous country strewn with lava and beset with lofty extinct volcanoes. The greater part is forested with coniferous trees intermixed with oaks, and, strange to say, with an isolated area of Digger pines (*Pinus sabiniana*) which extends from about 3 miles west of Cassel on Hat Creek easterly for 16 miles to a point on the west side of Beaver Creek Valley 3 miles east of the east base of Bald Mt. (which is partly clothed with Ponderosa pines). East of the narrow valley of Beaver Creek the Digger pines continue to the rim of the deep canyon of the Great South Loop of Pit River, thus penetrating well into the territory of the *Ap-woo-ro-kāe.* On the north they cross Pit River immediately west of Fall River Mills and reach their northern limit 4 or 4½ miles beyond, there entering the

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territory of the *A-choo'-mah'-we*. This forest is of unusual interest, consisting not only of Digger and Ponderosa pines, but also of an abundance of large junipers, and of mountain mahogany of both desert and California species, and including among the shrubs such subarid species as redbud, aromatic sumac, servisberry, mountain manzanita, and in places sagebrush.

Contrasted with this rock strewn forest area is the Valley of Hat Creek, a deep swiftly flowing stream bordered by grassy meadows and marshes fed by numerous springs, some of large size.

The *At'-soo-kā'-e* are in contact with seven tribes: the *Nos'-se* or *Yah'-nah* on the west and southwest, the *Mo-des'-se* on the northwest, the *To-mal-lin'-che-moi'*, *Il-mah'-we* and *A-choo'-mah'-we* on the north, the related *Ap-woo'-ro-kā'e* on the east, the *Mi'duan No-to-koi'-yo* on the south.

NAMES USED BY THE AT'-SOO-KĀ'-E FOR THEMSELVES AND OTHER TRIBES

Related tribes:

Ahk-koo'-e.—Tribe in Big Valley..... [*At-wum'-we*]
At'-soo-kā'-e (*Ah'-tsoo-kā'-e*).—Their name for their own tribe..... [*At'-soo-kā'-e*]
Oo'-kah-soo'-e.—'Tribe' in Burney Valley.... [Band of *At'-soo-kā'e*]
Oo'-we-che'-nah.—'Tribe' in Goose Valley.... [Band of *To-mal-lin'-che-moi'*]
Po'-mah-de'-he.—Tribe at Big Bend of Pit River ..... [*Mŏ-des'-se*]
Too-e-chow'-we.—Tribe in Fall River Valley.. [*A-choo'-mah-we*]
Wah'-doo-kā-e.—Tribe in Dixie and Eagle Lake Valleys ..... [*Ap-woo'-ro-kā'e*]

Unrelated tribes:

Ah-tso-hen'-ne-ye'.—Modok tribe ..... [*Loo'-too-ah'-me*]
Hen'-nah.—Tribe in Surprise Valley..... [*Northern Piute*]
Ok'-pis-se'.—Tribe south of Honey Lake..... [*Wash'-shoo*]
Pe'-kah-soo'-e.—Tribe in Big Meadows..... [*No-to-koi'-yo Midoo*]
Te'-mow-we.—Tribe at Round Mountain..... [*Nōs'-se* or *Yah'-nah*]

NAMES USED FOR AT'-SOO-KĀ'-E BY OTHER TRIBES

NAME	TRIBE USING NAME
Ah-doo-wah'-no-che-kah-te, At-too-an'-noo-che, At-wah-noo'-che, and *Tah-wahn'-noo'-che*	*Mo-des'-se*
Ah'-tsoo-kā'-e	*Ap-woo'-ro-kā'e*
Hah-dik'-yu'-we	*Ham-mah'-we*
Hat'-te-we'-we and *Hat'-te-we'-we es*	*At-wum'-we* and *As-tah-ke-wā'-che*
At-wum'-noo-che, To-ah-no'-che and *Had'-de-we'-we.*	*A-choo'-mah'-we*
Wah-num-che'-wah.—Band in Burney Valley.....	*Mo-des'-se*

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GEOGRAPHIC NAMES USED BY THE AT'-SOO-KĀ'-E

Burney Butte	Ah-po'-hah
Burney Valley	Oo'-kah-soo'-ĕ'
Dixie Valley	Op'-wah-de'-wah
Fall River Mills	Te-chow-e'-wah
Hat Creek	E-dits-te'-e
Lassen, Mt,	Per-roo'-e-ke'-nah
McGee and Crater Peaks	Bop'-ske
Pit River	Po'-mah-rah
Shasta, Mount	Wi'-ke

THE AP-WOO'-RO-KĀ'E TRIBE[1]

PLATES 24-27

The *Ap-woo'-ro-kā'e* or Dixie Valley tribe owned a considerable area immediately east of their near relative, the *At'-soo-kā'-e*, extending from the west side of Beaver Creek Valley, a mile or two east of Bald Mountain, easterly to Hayden Hill, and southeasterly to include Grasshopper Valley, Eagle Lake, and Willow Creek Valley or Basin, just over the ridge north of Susanville. The northern boundary, beginning on the west about a mile northeast of Bald Mountain, runs northeasterly, crossing Beaver Creek and the west arm of the south loop of Pit River to Muck Valley, whence it immediately recrosses Pit River (the eastern arm of the loop) and continues easterly in a nearly straight line for 15 miles to Hayden Hill. The east boundary, beginning at Hayden Hill, follows a southeasterly course along the low divide between Dry Valley and Grasshopper Valley and continues in the same general direction to the Fredonyer Mountains between Eagle Lake and Horse Lake, turning thence southward and following the divide east of Willow Creek Valley. The southern boundary follows the divide between the Susanville plain on the south and the valleys of Eagle Lake and Willow Creek on the north, continuing westerly along the same divide to the upper part of Pine Creek. The western boundary is the intertribal line already described as the eastern boundary of the *At'-soo-kā'-e*.

The territory of the *Ap-woo'-ro-kā'e* thus includes a very short stretch of Pit River (the southern part of the South Loop south of Muck Valley), the greater part of the valley of Beaver Creek, the whole of Horse Creek Valley, Dixie Valley, Grasshopper Valley, the

[1] The pronunciation of the last syllable of the name *Ap-woo'-ro-kā'e* is not perfectly clear. The terminal *e* is not distinctly uttered—as it is in the case of the *At-soo-kā'-e*. The word may be written *Ap-woo'-ro-kā"* (prolonging the *ā* sound) or *Ap-woo'-ro-kā'e*—as here adopted.

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valleys of Eagle Lake and Willow Creek, and numerous volcanoes, craters and buttes. The area of the tribe therefore is considerably greater than that of the related *At'-soo-kā'-e.*

The country of the *Ap-woo'-ro-kā'e* lacks the continuous coniferous forests of the At'-soo-kā'-e. At the same time some of the higher ridges are forested with yellow pine [Ponderosa pine], but the greater part of the area is open rocky sagebrush country dotted with juniper and mountain mahogany, in places of sufficient size and abundance to form low open forests—always attractive and welcome to the traveler—here and there alternating with moist grassy valleys and little lakes. Besides these, is the large and beautiful body of water known as Eagle Lake, bordered on the east by a juniper-covered lava ridge, and on the west, at a little distance, by continuous coniferous forests that push north from the valuable timber lands of the *No-to-koi'-yo Midoo.*

In marked contrast, and beginning only 4 or 5 miles north of Eagle Lake, is the bare alkali flat known as Grasshopper Valley which, though only 10 miles in length by half that in width, is a pointed reminder of the extensive desert flats not far away.

The *Ap-woo'-ro-kā'e* are in contact with six tribes, namely: the related *At'-soo-kā'-e* on the west, the Fall River *A-choo'-mah'-we* on the northwest, the Big Valley *At-wum'-we* on the north, the *Ham-mah'-we* of Madeline Plains on the northeast, the *Northern Piute* on the east and southeast, the *Mi'doo No'-to-koi'-yo* on the south.

Former Villages of the Ap-woo'-ro-kā'e[1]

Ap'-wah-re'-wah.—In Dixie Valley; said to have been a large town. [Can it be another name for *Rats-ow'-we-ke?*]

Pits-ă-roo'-hoo (or *Pit-să-roo'-hoo*).—In Willow Creek Valley.

Ras-să-re'-wah.—On Beaver Creek.

Rats-ow'-we-ke.—On Indian Creek at east end of Dixie Valley, at foot of mountain ridge of same name. Principal village.

Sik-kah'-kek.—Another village on Beaver Creek.

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[1] Harry Wilson, one of the head men of the Ap-woo'-ro-kāe, gave me the names of two villages on the Susanville side of Antelope Ridge, namely, *Nor'-ro-witch' hăch,* on or near present site of Susanville; and *Nor'-rah-chā'-e-che,* at south base of Antelope Ridge 5 or 6 miles northeast of Susanville. Another member of the tribe tells me that these villages belonged, not to his tribe, but to the Big Meadows tribe (*No-to-koi'-yo Midoo*) which probably is correct. I assume that Harry Wilson misunderstood my question.

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NAMES USED BY THE AP-WOO'-RO-KĀ'E FOR THEMSELVES AND OTHER TRIBES

Related tribes:

Ahk-we", Ah-koo-we'-e'.—Big Valley tribe.....[*At-wum'-we*]
Ah-pe-se', Ah-pis'-se-ye. Likely Valley tribe on upper South Fork Pit River.....[*Ham-mah'-we*]
Ah'-tsoo-kā'-e.—Hat Creek tribe.....[*At'-soo-kā'-e*]
Ap-woo'-roo-kā'e, Ap-poo'-ro-kā" (A-poo'-ro-kā'e)
Ap-wah'-roo-kā", Ap-wur'-roo-kā'e.—Their name for their own tribe.....[*Ap-woo'-ro-kā'e*]
As-stah-ke'-wah.—Hot Springs Valley tribe.....[*As-tah-ke-wĭ'-che*]
Po-mah-re'-ye.—Pit River tribe, next below Fall River Mills.....[*Il-mah'-we*]
Too'-e-tsow'-we (slurred *Te-tsow'-we*).—Fall River tribe.....[*A-choo'-mah'-we*]

Unrelated tribes:

Ah'-tsoo-hah-ne'-ye; Ah'-tsoo-hun'-ne.....[*Modok*]
Hen'-nah.....[*Piute*]
Mah'-nah-tse'-e; Mah'-nah'-tse.....[*Washoo*]
Pe'-kah-soo'-e; Te'-ke-soo-we.—Big Meadows tribe..[*No-to-koĭ'-yo Mi-doo*]
Te'-mow-we.....[*Nōs'-se* or *Yah'-nah*]

NAMES USED FOR THE AP-WOO'-RO-KĀ'E BY OTHER TRIBES

NAME	TRIBE USING NAME
Ah-mit'-at'-wum and Ah-mits'-che.—Band in Dixie Valley	*Mo-des'-se*
Ah-mitch'-e and Ah-mit'-se	*At-wum'-we, As-tah-ke-wĭ'-che,* and *Ham-mah'-we*
At'-to-maw'-wah.—Band in Grasshopper Valley	*A-choo'-mah'-we*
Choo-kā'-che.—Band on Beaver Creek	*Mo-des'-se*
Kaw-le'-wah and Ah-mit'-che	*A-choo'-mah'-we*
Wah'-doo-kā-e	*At'-soo-kā'-e*

GEOGRAPHIC NAMES USED BY THE AP-WOO'-ROO-KĀ'E

Bald Mt.	We-puk'-kah-me
Beaver Creek	Ko-too'-roo-si'
Davis Creek, Big	Ti'-yu mur-ră si'-te-ke
Davis Creek, Little	Wah-mo-pōwk'-noo-e
Big Valley	Ahk-woo'; Ah-ko-wah'
Crater Butte Lake, eight miles east-southeast of Poison Lake	Chā'-heu poo-wow'
Dixie Valley	Ap-wah-re'-wah
Dry Grass Valley, about 3 miles north of Poison Lake	Po-sĕ'-te
Dry Valley	Too'-ser-ritch'-e
Eagle Lake	At-sip sook-ă-de'; Ah-tsip soo'-kă-de'

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Grasshopper Valley ..... Ak-we yu-bow
Hat Creek ..... At-soo-kā'-yah
Hayden Hill ..... Tsah-mā'-heu
Lassen, Mt. ..... Wi'-ko hin'-ki
Likely Valley, on Upper South Fork Pit River.. Ah-pe-se'
Mountains between Dixie Valley and Big Valley. Ahk-wi-heu; Ahk-we'-ă-heu'
Muck Valley ..... Ah'-te-ke
Pit River (the main stream)..... Po'-mah-rah
Pit River, Great South Loop between Muck Valley and Horse Creek..... Jak-chah-se'
Poison Lake ..... Her-rup'-mah
Reservoir Valley ..... Too-loo-we'-too-ke
South Fork Pit River..... Ham'-mah-de'-he
Willow Creek (east side Hayden Hill to Big Valley) ..... Tsah'-he-se
Willow Cr., east of Eagle Lake..... Pe-cher'-ro-oo'
Willow Creek Mountain..... Pe-cher'-rŏ ah-koo

ALPHABETIC LIST OF PIT RIVER TRIBES AND BANDS

NAME	LOCATION AND AUTHORITY
Ă-choo'-mah'-we (Ah-choo-mah'-we; Ah-choo-mah-we'-che; Ă-ju'-mah'-we)	Fall River tribe; their name for themselves; also used by Mo-des'-se and related tribes. Pronounced *Ă-ju'-mah-we* by the At-wum'-we and As-tah-ke-wi'-che. [*Adzuma'wi* Handbook, 1907, from Curtin MS., 1889; DeAngulo, 1926.] See also *Hă-wis-aht'-wum-we.*
Ah-doo-wah'-no-che	Modesse name for At'-soo-kā'-e. See At-too-wah'-noo-che.
Ah-koo-we'-e' (Ahk-koo'-we; Ahk-we'')	Ap-woo'-ro-kā'e and At-soo-kā'-e name for Big Valley At-wum'-we.
Ah-lahm'-se-ge	Northeastern band of Hā'-we-si'-doo, east of southern part of Goose Lake. Their name for themselves; used also by the At-wum'-we, As-tah-ke-wi'-che, Ko'-se-al-lek'-tĕ and Ham-mah'-we.
Ah-me'-che (Ah'-mits)	Mo-des'-se name for closely related band at 'The Cove' on Pit River.
Ah-mit'-che (Ah-mit'-se, Ah-mits'-che, Ah-mitch'-e, Ah-mit, and Ah'-mit at'-wum)	Variants of name applied to Dixie Valley Ap-woo'-ro-kā'e by all the Pit River tribes proper (Achoomah'-an Family).
Ah-pe'-dah-dā' (Yah-pe'-dah-dā') ...	Large At-wum'-we village on Ash Creek in the open flat of Big Valley 7 miles west of Adin. Ruling band.

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Ah-pis-se'-ye (Ah-pe-se') .....Ap-woo'-ro-kā'e name for Ham-mah'-we.

Ah-stah'-ke-wi'-che .....See As-tah-ke-wi'-che.

Ă-ju'-mah-we .....As-tah-ke-wi'-che and At-wum'-we pronunciation of Ă-choo'-mah'-we. Used also by members of other tribes.

Akʰowigi .....Given by Dixon (1908) as At-soo-kā'-e name for Beaver Creek band [of Ap-woo'-ro-kā'e].

Ap'amadji .....Given by Dixon (1908) as Ă-choo'-mah'-we name for Burney Valley band of At-soo-kā'-e. See *Wah'-num-che-wah.*

Ap-woo'-ro-kā'e .....Dixie Valley tribe, extending to and including Eagle Lake; their name for themselves. [Name written *Apwaraki* by Kelsey MS., 1906; *Apwarukē'i* by Dixon, 1908.]

As'-tah-kah-we-zo' .....Ham-mah'-we name for As-tah-ke-wi'-che.

As-tah-ke-wi'-che[1] (As-tah-re-wi'-se).Tribe in Canby (Hot Springs) Valley; their name for themselves (pronounced As-tah-re'-wi'-che). Called As-tah-ke'-watch, As'-tah-re'-wah and As'-tah-kah-we-zo' by the Ham-mah'-we; As-tah'-re-wi'-ge by the At-wum'-we; Ah-stah-ke-wi'-che by the Ă-choo'-mah'-we and slurred As-tah-ke'-wah (name of Hot Springs Val.) by neighboring tribes. *Astakiwi* of Kroeber, 1925.

A-tco-mâ-wi (Mallery, 1881).....See Ă-choo'-mah'-we.

At-soo-kā'-e (Ah'-tsoo-kā-e) .....Hat Creek tribe; their name for themselves; used also by Ap-woo'-ro-kā'e. [Written *Atsugē'wi* by Dixon, 1905 and 1908; *Atsuge* by Mason, 1904, and by DeAngulo, 1926].

At'-to-maw'-wah ..... Ă-choo'-mah'-we name for Grasshopper Valley band of Ap-woo'-ro-kā'e.

At-too-wah'-noo-che (At-too-an'-noo-che; slurred Ah'-wah-noo'-che) ...Mo-des'-se name for Hat Creek tribe (At-soo-kā'-e).

Atuami, A-tu-a-mih .....See At-wum'-we.

At'-wum-chan'-ne (At-wam-chun'-ne) .....Mo-des'-se name for Ham-mah'-we.

At-wum'-jen-ne .....As-tah-ke-wi'-che name for Ham-mah'-we.

At-wum'-noo-che .....Ă-choo'-mah'-we name for At-soo-kā'-e.

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[1] Name written *Astakaywas* and *Astakywich* by Stephen Powers in 1874: *Es-ta-ke'-wach* by Powers in 1877; *Astaqke'wa* in Handbook Am. Inds. (after Curtin MS., 1889), 1907; *Astaghiwawi* by DeAngulo in 1926.

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At-wum'-we ..... Big Valley tribe; their name for themselves; used also by As-tah-ke-wi'-che. [Written *A-tu-a'-mih* by Powers, 1877; *Atuami* by Kroeber, 1925.]

At-wum-zan'-ne and E-tah'-me ..... Ham-mah'-we names for At-wum'-we. [Written *Atwamzini* by DeAngulo, 1926.]

Bah'-bo^{ch}-e (Dah-bo^{ch}-e, or Tŭ-bŭ^{ch}-we) ..... Ham-mah'-we name for Ash Creek band of At-wum'-we. See Ko-sel-lat'-to-mah.

Big Valley Indians (Gatschet, 1890). See At-wum'-we.

Chah'-lahk-se ..... Hā-we-si'-doo village and band at west base of Warner Mts. about 11 miles northeast of Alturas.

Chah-wahs'-te' chan-ni-che ..... One of the Mo-des'-se names for E-tsah'-tah, the Goose Valley band of To-mal-lin'-che-moi'.

Chenoya (Chenoyana, Chunoi'yana, Teunoiyana) ..... Yah'-nah name for At-soo-kā'-e. Handbook 1907 from Curtin MS. 1885.

Choo-kā'-che ..... Mo-des'-se name for Beaver Creek band of Ap-woo'-ro-kā'e. See Ras-să-re'-wah and Sik-kah'-kek.

Chu-mâ'-wa ..... Given by Powers (1877) as tribe in Round Valley. The Round Valley referred to is just NE of Adin, in the NE corner of Big Valley. It was occupied by the Se-te'-wah band of At-wum'-we. The Chu-mâ-wa is probably a rendering of Ju-mah'-we, a term sometimes applied to Pit River tribes.

Dah-bo^{ch}-e (or To-bŭ^{ch}-we) ..... Mo-des'-se name for Ash Creek band of At-wum'-we; called *Bah'-bo^{ch}-e* and *To-bŭ^{ch}-we* by the Ham-mah'-we; *De-baw'-kĕ-ĕ* by the As-tah-ke-wi'-che. See Ko-sel-lat'-to-mah.

Dal'-mo-mi'-che, Del'-mo-mi'-che; Tal'-mo-mi'-che (village, Del-mo'-mah, Tal-mo'-mah) ..... Ko'-se-al-lek'-tĕ village and band at Essex Hot Spring, 10 miles westerly from Alturas; westernmost band of Ko'-se-al-lek'-tĕ.

Dixie Valley tribe..... See Ap-woo'-ro-kā'e.

Do-lu'-ko'-be or Tŭ-lok-ko'-be..... Name of South Fork Pit River, often applied to the Ham-mah'-we.

Doo'-me-lit ..... See Too'-me-lit.

Eagle Lake Indians (Rebellion Records, 1897) ..... See Ap-woo'-ro-kā'e.

E-chat'-tah-we ..... A-choo'-mah'-we name for Goose Valley band of To'-mal-lin'-che-moi'.

E-poo'-de ..... Mo-des'-se name for closely related band on Montgomery Creek.

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Es-ta-ke'-wach (Powers, 1877)..... See As-tah-ke-wi'-che.

E-tah'-me ..... One of the Ă-choo'-mah'-we and Ham-mah'-we names for Big Valley At-wum'-we; also used by Ă-choo'-mah'-we as nickname for Mo-des'-se.

E-tsah'-tah (E-tsah'-tah iss) ..... Mo-des'-se name for Goose Valley band of To-mal-lin'-che-moi'. See E-chah'-tah-we.

Had'-de-we'-we ..... See Hat'-te-we'-we.

Hah-dik'-yu'-we ..... See Hat-te-we'-we.

Hah-te'-wah ..... Given by Powers (1877) as Hot Springs Valley tribe [As-tah-ke-wi'-che]. See *Han-too'-che.*

Hamefcuttelies (Powers, 1874; Ha-mef-kut'-tel-li, Powers, 1877)..... See Ham'-mă-o-ket'-tal-le.

Ham-mah'-le-lah'-pe ..... Ko'-se-al-lek'-te village and band on Pine Creek near mouth of canyon where creek emerges from west base of Warren Peak. The territory of this band adjoins that of the Ham-mah'-we on the south and extends west to South Fork Pit River. Name used also by Ham-mah'-we.

Ham-mah'-we ..... Tribe from Likely Valley on South Fork Pit River to Madeline Plains; their name for themselves; used also by Mo-des'-se, At-wum'-we, As-tah-ke-wi'-che, and Ko'-se-al-lek'-tĕ. [Name written *Hu-mâ'-whi* by Stephen Powers in 1877. *Hamawi,* Kroeber, 1925.]

Ham'-mă-o-ket'-tal-le[1] ..... Mo-des'-se name for At-wum'-we of Big Valley.

Ham-mow-ēs' ..... One of the At-wum'-we names for Fall River Ă-choo'-mah'-we. [See also Ă-ju'-mah'-we.]

Han-too'-che (Han-too', Han-teu').. As-tah-ke-wi'-che band in Stone Coal Valley. Name used by Mo-des'-se for entire As-tah-ke-wi'-che tribe. *Han-tiwi,* Kroeber, 1925.

Hat Creeks; Hat Creek tribe..... See At-soo-kā'-e.

Hat'-mah (Too-hat-mah) ..... Cayton Valley band of Il-mah'-we; their own name; used also by Mo-des'-se and Ă-choo'-mah'-we.

Hat'-te-we'-we (Had'-de-we'-we, Hat'-te-we'-we es) ..... As-tah-ke-wi'-che and At-wum'-we name for Hat Creek At-soo-kā'-e. Called Hah'-dik'-yu'-we by the Ham-mah'-we. [Written *Hadi'wiwi* by DeAngulo, 1926.]

[1] Called Hamefcuttelies by Stephen Powers in 1874.

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Hā-we-si'-doo (Hā-we-sā'-doo, Hā-we-si'-too) ..... Tribe from Goose Lake to northern end of Alturas plain; their name for themselves; used also by Ă-choo'-mah'-we, As-tah-ke-wi'-che, Ham-mah'-we and Ko'-se-al-lek'-tĕ.

Hā'-wis-aht'-wum-we ..... One of the names used by Mo-des'-se for Ă-choo'-mah'-we.

Ho-mā'-wet ..... Ko'-se-al-lek'-tĕ village and band at west base of Warner Range about 6 miles northnortheast of Alturas.

Hot Springs' Indians (Gatschet, 1890) ..... See As-tah-ke-wi'-che.

Hu-mâ-whi (Powers, 1877; Powell, 1891) ..... See *Ham-mah'-we.*

Idjuigilum'idji ..... Given by Dixon (1908) as Ă-choo-mah'-we name for Beaver Creek band of Dixey Valley Indians [Ap-woo'-ro-kā'e]. Called Choo-kā'-che by the Mo-des'-se.

Il-mah'-we ..... Pit River tribe, from Pecks Bridge nearly to Fall River; their name for themselves; used also by the Mo-des'-se, Ă-choo'-mah'-we and At-wum'-we. Named from *Il-mah'*, their principal village.

Ko'-se-al-lek'-tĕ (Ko-sal-lek'-tah) .. Tribe occupying Alturus Plain from about 8 miles north to 6 miles south of Alturas; their name for themselves; used also by all related tribes from the *Mo-des'-se* to the *Ham-mah'-we.* They had at least 5 permanent (winter) villages. [Doubtless DeAngulo's *Qosa-lektawi* (1926), mentioned without locality.]

Kaw-le'-wah ..... Ă-choo'-mah'-we name for Dixie Valley Ap-woo'-ro-kā'e.

Ko-sel-lat'-to-mah ..... At-wum'-we band in Ash Creek Valley.

Kum' Mi'-dem ..... No-to-koi'-yo Midoo name for Pit River Tribes. *Kŏm'-maidŭm,* Handbook 1907 (from Dixon MS. 1904).

Lah'-lah-pis'-mah ..... Band of Mo-des'-se at Hot Springs on south side of Big Bend of Pit River, opposite Mo-dess', the ruling village, which was on the north side.

Made'qsi (Handbook 1910, from Curtin MS. 1889) ..... See Mo-des'-se.

Mah-pe'-dah-dā' ..... Il-mah'-we band at junction of Salmon Creek with Pit River.

Mah-dā'-se ..... One of the Ă-choo'-mah'-we pronunciations of Mo-des'-se, which see. Written *Madehse* by Kroeber, 1925.

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Mă-too-tsā' ..... As-tah-ke-wi'-che name for Hā'-we-si'-doo band on west side of southern part of Goose Lake.

Mo-aht'-was (Mo-e-twas, Palmer 1855; Mo'atwash, Mu'atwash, Gatschet 1890) ..... Klamath name for Pit River Indians.

Mo-des'-se ..... Tribe at Big Bend Pit River; their name for themselves. Used also by neighboring tribes. Pronounced *Mah-dŭ'-se* by some of the *A-choo'-mah'-we*. [Written Made'qsi in *Handbook Am. Inds.*, 1910, from Curtin MS., 1889.] Named from Mo-dess', the ruling village.

Monctske (Russell, 1857) ..... Yah'nah name for Mo-des'-se.

Mu'atwash ..... See Mo-aht'-was.

Oo'-kah-soo-we (Oo'-kah-soo-we ah-di-ow'-te) ..... At-soo-kā'-e name for Burney Valley band of their own tribe. Called *Wah'-num-che'-wah* by the Mo-des-se.

Oo-le'-moo-me ..... Mo-des'-se name for their village at Hot Spring on south side Pit River at Big Bend.

Oo'-we-che'-nah ..... At-soo-kā'-e name for Goose Valley band of To-mal-lin'-che-moi'. [See also E-tsah'-tah-iss.]

Palaihnih or Palaiks ..... Name used by Horatio Hale, for Pit River tribes collectively (Ethnog. Wilkes Expd. 218, 569, 1846) and adopted by Gallatin, 1848; Latham, 1850; Berghaus, 1852; Eastman (map), 1852; Ludewig, 1858; Bancroft, 1875; Gatschet, 1877; Powell, 1891.

Pikas (Hutchings, 1857) ..... Given as Indian Valley name for Pit River Indians. Probably an error. The Indian Valley Indians are *No-to-koi'-yo Midoo*.

Pat'-yu-lo'-mit ..... Ham-mah'-we name for their bands in West Creek and Jess Valleys.

Pit Rivers ..... Common name for Pit River tribes.

Po-mah-de'-he (Po-mah-re'-he, Po-mah-re'-ye) ..... At-soo-kā'-e and Ap-woo'-ro-kāe name for Mo-des'-se and Il-mah'-we. Written *Pomar'ii* by Dixon (1908).

Poo'-e-choos (Poo'-e-soos') ..... Name, meaning 'easterners,' applied loosely by Wintoon to tribes east of themselves; often referring to Yah'-nah and Pit Rivers collectively. Variously written, as *Pu'-i-su, Pu'-su, Pu'-shush*, and other forms.

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Qosalektawi ..... Achoma'wan 'group' mentioned without locality by de Angulo, 1926. Obviously Ko'-se-al-lek'-te, which see.

Se-te'-wah ..... At-wum'-we band in Round Valley, NE of Adin.

Tah'-sah ..... Mo-des'-se village on south side Pit River near Rope Ferry, ½ mile east of Hot Spring at Big Bend.

Tah'-wahn-noo-che ..... Slurred form of At-too-wah'-noo-che, the Mo-des'-se name for the Hat Creek At-soo-kā'-e. [See also Too'-e-tsow'-we.]

Tal'-mo-mi'-che ..... See Del'-mo-mi'-che.

Tcuno'iyana ..... See Chenoya.

Te-tsow'-we (Te'-chow-we) ..... Ap-woo'-ro-kā'e and At-soo-kā'-e name for Fall River A-choo'-mah'-we. Also called Too'-e-tsow'-we by the Ap-woo'-ro-kā'e.

To-ah-no'-che ..... A-choo'-mah'-we name for Hat Creek At'-soo-kā'-e. [See also Tah'-wahn-noo-che.]

To-bŭ^{ch}-we (Bah-bo^{ch}-e or Dah-bo^{ch}-we) ..... Ham-mah'-we name for Ash Creek band of At-wum'-we. Called *Dah-bŏ^{ch}-e* by the Mo-des'-se.

To-mal-lin'-che-moi' ..... Tribe on Pit River between Mo-des'-se and Il-mah'-we. Their own name; used also by Mo-des'-se.

Too'-e-tsow'-we (Too'-e-chow'-we, Te'-tsow-we) ..... Ap-woo'-ro-kāe and At-soo-kā'-e name for Fall River A-choo'-mah'-we.

Too-hat'-mah (slurred, Hat'-mah) .. Cayton Valley band of Il-mah'-we; their name for themselves; used also by Mo-des'-se and A-choo'-mah'-we.

Too'-me-lit (Doo'-me-lit) ..... Ko'-se-al-lek'-tĕ village and band about 3 miles southwest of Alturas.

To-tā'-o-me and Too-tā'-o-mal'-le ... Mo-des'-se name for At-wum'-we of Big Valley.

Tuqte'umi ..... Il-mah'-we name for At-wum'-we (Handbook 1907, from Curtin MS., 1889).

Wah'-doo-kā-e ..... At-soo-kā'-e name for Dixie Valley Ap-woo'-ro-kāe.

Wah'-num che-wi'-che ..... Mo-des'-se name for Burney Valley band of At-soo-kā'-e. See Oo'-kah-soo-we.

Wamari'i ..... Given by Dixon (1908) as At-soo-kā'-e name for Burney Valley band. See Wah'-num-che-wi'-che.

Wen'-ne-hah'-le ..... Il-mah'-we village and band at falls in canyon of Pit River 3 miles below Fall River mouth.

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Yah-pe'-dah-da' .....See Ah-pe'-dah-dā'.
Yah'-ho-re'-choo'-ish .....One of the Shaste names for Pit River Indians.
Yuca's [error for Yukes].....Name, meaning enemies, given by Lieut. Edward Russell and Col. G. Wright in 1853 (1857) for Pit River Indians.

NAMES USED FOR PIT RIVER TRIBES (COLLECTIVELY) BY UNRELATED TRIBES

The Klamath (Lakes) tribe call the Pit River Indians.. Mo-aht'-was
The Northern Piute (Fort Bidwell) tribe call the Pit River Indians ..... Ish'-she show'-we
The No-to-koi'-yo tribe call the Pit River Indians..... Kum'-mi'-dem
The Shaste tribe call the Pit River Indians..... Oo'-chah-hah-roo chah'-wish and Yah'-ho-re' choo'ish
The Wintoon tribe call the Pit River Indians..... Poo'-e-soos'
The Yah'-nah or Nos'-se tribe call the Pit River Indians. Chun-noi' yah'-nah

NAMES USED BY PIT RIVER TRIBES FOR UNRELATED TRIBES OF NORTHERN CALIFORNIA

NAME USED	TRIBE USING NAME	TRIBE TO WHICH NAME IS APPLIED
Ah-lah'-me (*Al-lah'-me*).	*Mo-des'-se, A-choo'-mah'-we* and *As-tah-ke-wī'-che.*	Klamath Lakes tribe.
Ah-poo'-e (*A-poo'-e*). [See also *Hen'-nah.*]	*Mo-des'-se, A-choo'-mah'-we, At-wum'-we, As'-tah-ke-wī'-che, Ham-mah'-we.*	Northern Piute.
Ah-tah'-me-kah'-me. [See also *Pas-sā'-put-che, Te-sī'-che* and *Te'-mow'-we.*].	*Mo-des'-se.*	Yah'-nah or Nōs'-se.
Ah-tsoo-hen'-ne-ye' (*Ah-tsoo-hah-ne'-ye, Ah-tsoo-hun'-ne*).	*At'-soo-kā'-e* and *Ap-woo'-ro-kā'e.*	Modok.
A-te'.	*Mo-des'-se.*	O-kwahn'-noo-tsoo'.
Bă-kah'-mah'-le (*Pah'-kĕ-mah-le; Pah-rah'-mah-le*). [See also *Pah-kah'-mah'-le, Bug-gah'-mah-le* and *Kā-bā'-mah'-le*].	*Mo-des'-se.*	No'-to-koi'-yo Midoo
Bug-gah'-mah-le and *Puk-kah'-mah.*	*A-choo'-mah'-we.*	No'-to-koi'-yo Midoo.
Che-yu'-wit.	*Mo-des'-se.*	Tribe on Squaw Creek; may be band of O-kwahn'-noo-tsoo'.
Ek-pe'-me (*E^{ch}-pe'-me*).	*A-choo-mah'-we, At-wum'-we* and *Mo-des'-se.*	Northern Wintoon.

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Hă-wis-se-kahs'-te.	*Mo-des'-se.*	Trinity River Wintoon.
Hen'-nah.	*At'-soo-kā'-e* and *Ap-woo'-ro-kā'e.*	Northern Piute.
Kă-bă'-mah'-le, Kah-bah'-mah'-le and *Pă-kah'-mah'-le.* [See also *Bă-kah-mah'-le.*]	*At-wum'-we* and *As-tah-ke-wi'-che.*	No'-to-koi'-yo Midoo.
Loo'-too-ah'-me (*Loot-wah'-me*), *Loo'-too-am'-me.*	*A-choo'-mah'-we, At-wum'-we, Mo-des'-se, As-tah-ke-wi'-che* and *Ham-mah'-we.*	Modok or Modok-Klamath collectively
Mah-nah-tse'-e.	*Ap-woo'-ro-kā'e.*	Wash'-shoo.
Ok-pis-se'.	*At-soo-kā'-e.*	Wash'-shoo.
O-se'-low-wit.	*Mo-des'-se.*	*Wi-dal'-pom* band of Northern Wintoon.
Pah-kah'-mah-le', Pah'-kĕ-mah-le, Pah-rah'-mah-le. [See also *Bă-kah'-mah'-le, Bug-gah'-mah-le, Kă-bă'-mah'-le* and *Puk-kah'-mah.*].	*Ham-mah'-we* and *Mo-des'-se.*	No'-to-koi'-yo Midoo.
Pas-să'-put-che. [See also *Te'-si-che.*]	*Mo-des'-se.*	Yah'-nah or Nōs'-se.
Pe'-kah-soo'-e.	*At-soo-kā'-e* and *Ap-woo'-ro-kā'e.*	No'-to-koi'-yo Midoo.
Puk-kah'-mah and *Bug-gah'-mah-le.*	*A-choo'-mah'-we.*	No'-to-koi'-yo Midoo.
Sas'-te'-che (*Shas'-te'-che*).	*A-choo'-mah'-we* and *Mo-des'-se.*	Sas'-te (Shas'-te) and O-kwahn'-noo-tsoo'.
Te'-ke-soo-we.	*Ap-woo'-ro-kāe.*	No'-to-koi'-yo Midoo.
Te'-mow-we.	*At'-soo-kā'-e* and *Ap-woo'-ro-kā'e.*	Yah'-nah or Nōs'-se.
Te'-si-che.	*A-choo'-mah'-we, At-wum'-we* and *Mo-des'-se.*	Yah'-nah or Nōs'-se.

WORD BORROWINGS FROM WESTERN SHOSHONEAN TRIBES BY THE AT-SOO-KĀ-E AND AP-WOO'-RO-KĀE

It will be observed that the suffix '*ōb*' is employed by the *At-soo-kā'-e* and *Ap-woo'-ro-kā'e* to denote that the words to which it is attached are names of plants (see Vocabularies, pp. 10 and 11). The term is borrowed from certain western Shoshonean dialects in which, similarly, it follows the specific names of many of the trees, bushes and other forms of plant life.

And it is still more surprising to note that among the various Shoshonean tribes certain words that by chance or otherwise bear

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the closest likeness to those in the *Atsookā'-an* languages occur, *not* in the nearby *Northern Piute,* but in the vocabularies of the geographically remote *Monache* tribes of the western slope of the southern Sierra Nevada, notably the *Em'-tim-bitch* and *Wuk-sā'-che.* This is shown by the following couplets:

	EM'-TIM-BITCH OR WUK-SĂ-CHE OR BOTH	A-SOO-KĀ-E OR AP-WOO'-RO-KĀE OR BOTH
Redbud	Kar-rah'-tah ōb	Tah-kah-kah ōb
Wild Plum	Pah-too ōb	Paht-kōb
Elder	Hoo-boo ōb	Ko-bah ōb
Acorn	Tik'-ki	Tah'-ke
Nuthatch	Kah'-dah-kah'-dă	Kah'-rah-kah-rah'
Small Rabbit (Cottontail or Brush Rabbit)	Tah-bo'-che	Dā-buk'-ke
Now	Man'-ne-kŭ	Ken'-ne-kah
Teeth	Tow'-wah	Tsow'
Dry hide	Poo-hoo	Poo'-doo

NAMES GIVEN BY JA-MUL

Names for Pit River and neighboring tribes occurring in the mythological history of the *Mo-des'-se*—names said to have been given many thousands of years ago by *Jā'-mul,* the old Coyote-man deity:

Ah-lah'-me ..... Klamath tribe
Ah-poo'-e ..... Northern Piute
Ah-tum'-me-kah'-me ..... Tribes of Sacramento Valley
Bă-kah-mah'-le ..... Tribe south of Mt. Lassen [No-to-koi'-yo]
Ek-pe'-me ..... McCloud River Wintoon
Hā'-wis-se-kas'-te ..... Trinity River Wintoon
Il-lo-wah'-me ..... Tribes of northwestern California (collectively)
Il-mah'-we ..... Pit River tribes (collectively)
It-te-pah'-tah-me e-kah ..... Yah'-nah of Round Mt. Region
Loo-too-ah'-me ..... Modok tribe
Sas'-te'-che ..... Shaste tribe

ILLUSTRATIONS

The photographs reproduced on Plate 6 were taken by Zenaida Merriam; all others by C. Hart Merriam.

PLATE 1. Big Bend of Pit River, Shasta County, from *Lah'-lah-pis'-mah* Hot Spring on south side of river. Looking down stream (westerly). Headquarters of the *Mo-des'-se* tribe.

PLATE 2. *Mo-des'-se* man and wife. Man, *Istet Woiche,* better known as William Hulsey. Big Bend, Pit River.

PLATE 3. *Mo-des'-se* man and wife. Man, *Istet Woiche,* better known as William Hulsey. Big Bend, Pit River. Full face front view.

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PLATE 4. *Mo-des'-se* woman. Mrs. Walter Moody and daughters. The daughters are half Yah'-nah, the father, Walter Moody of Montgomery Creek, being a Yah'-nah.

PLATE 5. Burney Falls in Burney Creek Canyon, Shasta County. Territory of the *Il-mah'-we* tribe.

PLATE 6. Pit River Canyon about three miles below junction of Fall River. Territory of the *Il-mah'-we* tribe.

Fig. 1. The Falls, 3 miles below Fall River Mills.

Fig. 2. The Canyon just above the Falls.

PLATE 7. *Il-mah'-we* man. John Carmony of Cayton Valley, Shasta County.

PLATE 8. Fall River Valley, Shasta County, California. Territory of *A-choo'-mah'-we* tribe.

Fig. 1. Big Spring at head of Fall River. There are several of these huge springs.

Fig. 2. Fall River Valley. Looking west from near Glenburn, showing the flat open valley bordered by ponderosa pines.

PLATE 9. Big Valley, on line between Modoc and Lassen Counties. Territory of the *At-wum'-we* tribe. Showing level sagebrush plain. One of our camps in foreground.

PLATE 10. *At-wum'-we* men. Near Lookout, Big Valley, Modoc County. Chief Harry George (right); Billy Quinn (left).

PLATE 11. *At-wum'-we* women. Near former village of *Ah-pe'-dah-dă'*. Big Valley, Modoc County, California.

PLATE 12. *At-wum'-we* tribe. Frames of individual sweathouses, called *Tem'-mah-kah'-me*. Big Valley, Modoc County. The stones to be heated may be seen inside the frame.

PLATE 13. Eastern part of Hot Springs Valley between Canby and Alturas. Showing in background *O-pah'-wah Butte*, formerly known as Rattlesnake Butte (and still earlier as Centerville Butte). Eastern limit of territory of *As-tah-ke-wi'-che* tribe.

PLATE 14. *As-tah-ke-wi'-che* man. Sam Spring, at his home in Hot Springs or Canby Valley, Modoc County.

PLATE 15. *As-tah-ke-wi'-che* man. Robin Spring, at his home in Hot Springs or Canby Valley, Modoc County.

PLATE 16. West slope of Cedar Pass, Warner Range, Modoc County. Territory of Ho-mah'-wet band of *Ko'-se-al-lek'-te* tribe. The Warner Mountains are the divide between the *Achomawan* tribes on the west and the Northern Piute on the east.

PLATE 17. *Ko'-se-al-lek'-te* man. Sam Steel, Alturas, Modoc County.

PLATE 18. Typical lava flow in sagebrush desert east of Madeline Plains, Lassen County. Territory of *Ham-mah'-we* tribe.

PLATE 19. *Ham-mah'-we* man. Jack Williams, Chief. Likely Valley, South Fork Pit River, Modoc County.

PLATE 20. *Ham-mah'-we* man. Old Pete, Likely Valley, South Fork Pit River, Modoc County.

PLATE 21. *Ham-mah'-we* woman. Old Sally and her shack. Likely Valley Rancheria.

PLATE 22. Dense coniferous forest near Burney, on east side of northern Sierra Nevada, Shasta County, California. Territory of *At-soo-kă'-e* tribe.

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PLATE 23. *At-soo-kā'-e* family, Hat Creek, Shasta County.

PLATE 24. Lava dike about seven miles northwest of Grasshopper Valley, Lassen County. Territory of *Ap-woo'-ro-kā'e* tribe.

PLATE 25. *Ap-woo'-ro-kā'e*. Dixie Valley tribe, Robert Rivis and wife.

PLATE 26. *Ap-woo'-ro-kā'e* man. Robert Rivis. Front and profile views. Note round head—extreme brachycephalic type.

PLATE 27. *Ap-woo'-ro-kā'e* woman. Dixie Valley tribe. Mrs. Robert Rivis. Front and side views.

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Big Bend of Pit River, Shasta County, California. Photo from *Lah'-lah-pis'-mah* Hot Spring on south side of river. Headquarters of *Mo-des'-se* tribe.

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Istet Woiche and wife. *Mo-dcs'-se* tribe. Big Bend Pit River, Shasta County, California.

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Mo-des'-se man and wife. Istet Woiche, leader of tribe. Big Bend Pit River, Shasta County, California.

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Mo-des'-se woman, Mrs. Walter Moody, and daughters. The girls are only half *Mo-des'-se*, their father being a *Yah'-nah*—Walter Moody, of Montgomery Creek, Shasta County, California.

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Burney Falls, Burney Creek Canyon, Shasta County, California. Territory of the *Il-mah'-we* tribe.

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FIG. 1.

FIG. 2.

Pit River Canyon below Fall River Mouth.

Fig. 1. Falls 3 miles below Fall River Mills.
Fig. 2. The Canyon, just above the Falls.

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Il-mah'-we man, John Carmony. Cayton Valley band (*Too-hat'-mah*).

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FIG. 1.

FIG. 2.

Fall River Valley, Shasta County, California. Territory of *A-choo'-mah'-we* tribe.

Fig. 1. Big Spring, head of Fall River.
Fig. 2. The flat open valley bordered with Ponderosa pines, looking westerly from near Glenburn.

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Big Valley on border where Lassen and Modoc counties meet—a broad flat sagebrush plain. One of our camps in foreground. Territory of *At-wum'-we* tribe.

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At-wum'-we men. Chief, Harry George (right); Billy Quinn (left). Big Valley, Modoc County, California, near old Indian village *Ah-pe'-dah-dā'*.

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Women of *At-wum'-we* tribe near former village of *Ah-pe'-dah-dă'*. Big Valley, Modoc County, California.

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FIG. 1.

FIG. 2.

Frames of Individual Sweathouses (*Tcm'-mah-kah'-me*) of the *At-wum'-we* tribe. Big Valley, Modoc County, California.

Fig. 1. Near Lookout.
Fig. 2. Near *Ah-pe'-dah-dă'*.

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Ham-mah'-we woman. Old Sally at her home, Likely Valley Rancheria, South Fork Pit River, Modoc County, California.

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Coniferous forest near Burney, Shasta County, California. Territory of the *At-soo-kā'-e* tribe.

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At-soo-kā'-e family. Hat Creek, Shasta County, California.

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Lava dike and scattered Ponderosa pines about 7 miles north-northwest of the desert flat known as Grasshopper Valley. Lassen County, California. Territory of the *Ap-woo'-ro-kă'e* tribe.

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Ap-woo'-ro-kā'e tribe (Dixie Valley tribe). Robert Rivis and wife.

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Ap-woo'-ro-kā'e man, Robert Rivis. Dixie Valley tribe. Note the round head—extreme brachycephalic type.

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Ap-woo'-ro-kā'e woman, Mrs. Robert Rivis. Dixie Valley tribe.

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13

The Case for Chemical Warfare.

BY

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Reprinted from THE CHEMICAL AGE *of*
May 7, 1921.

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The Case for Chemical Warfare

By Sir WILLIAM J. POPE, K.B.E.

THE recent war witnessed the introduction of many fresh military weapons; some of these were received with almost universal approval, whilst others provoked torrents of condemnation. The layman finds it difficult to understand this contrast. The apparently illogical manner in which praise or blame is distributed to any particular military novelty may well obscure the clear judgment just now so necessary to the selection of sound military methods for future use; some attempt should be made to discuss the whole question of innovation in military processes with a view to fixing essential principles and to removing obvious misunderstandings. Such a task as this calls for the co-operation of many minds of diverse types; in the present article a few considerations are advanced which bear intimately upon the whole subject.

The military mind always resents anything new. During the early part of the recent conflict I was repeatedly told by military men in responsible positions that the war was to be fought out on the same lines and by the same methods as applied during the Boer War; this fact should be remembered, because many gentlemen who held this conviction retain their official positions, and still exhibit signs of interest in terrestrial affairs when threatened by a demand for businesslike and progressive conduct. A gleam of hope is, however, discernible in that the military Trade Union has permitted dilution by the establishment on the service of many thoughtful men who achieved great things as progressive soldiers during the war.

Opposition to novelty by Government servants was as strong in the past as it is in the present. During the Crusades the use of the so-called Greek Fire was regarded as contrary to the laws of war, and even in quite modern times orders were given that soldiers captured in possession of rifled guns were to be shot out of hand. Four hundred years ago Ariosto explained in "Orlando Furioso" how, in Arthurian times, the fiend presented firearms to the hero, Roland, who was certainly in need of aid. Scorning this unchivalrous device, Roland threw it into the sea, whence it was fished up centuries later by the Germans, perfected by

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their abominable cunning, and used against mankind. Official conservatism was emphasised by the Church from the moment when Christianity secured political power; the second Lateran Council launched a threat of excommunication against those who used the arbalest, the machine for throwing big stones, against Christian troops. The permanent official parasite makes an abiding home in the blankets, and he and his kind, unlike Mark Twain's friends, always combine to resist the intrusion of a higher animal and to paralyse all effective movement. The permanent official will never lead; his future lies behind him, and ended when he took up his appointment. No hope of an enlightened policy concerning military methods can be descried but in an instructed public opinion translated into action by responsible political and military leaders.

Let us enumerate a few of the new military weapons forged during the last war, and consider the various ways in which these have appealed to the public imagination. Aeroplane warfare was entirely novel, and, despite official apathy, became a powerful and reputable instrument of war without much public protest. Poison gas warfare was new, but not entirely novel, because it was seriously proposed by the late Lord Playfair at the outset of the Crimean War. The autobiography of this eminent statesman and chemist shows that he understood the possibilities of chemical warfare, and regarded it as a very humane weapon. Thirdly, preventive medicine made, in 1914, its first serious appearance as an offensive arm; this subject is further discussed below. Many other novel developments in military methods, of course, emerged, but for our present purpose the above will suffice. Aeroplane warfare excited public acclamation; chemical warfare aroused universal execration; preventive medicine was welcomed as an entirely benevolent contribution of science towards the amelioration of suffering.

These diverse popular verdicts call for explanation; they can only be reconciled on the basis of some theory of warfare. Such a theory seems now capable of being stated in vague outline. War is very generally regarded as the highest form of sport; the exhilaration of the pursuit is enhanced when the quarry has the power of hitting back and of perhaps killing the sportsman. Aeroplane warfare ministers to the sporting instinct by increasing the excitement. Chemical warfare, on the other hand, is regarded as a dirty weapon; the man who uses it would shoot foxes and net salmon. Preventive medicine acts like a super-efficient game-keeper; it preserves the game for the legitimate sportsman, and hence is held in esteem.

This rudimentary theory indicates why chemical warfare

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is generally execrated whilst the military use of preventive medicine is universally approved. Let us, however, consider the results achieved by the recent use of these two new weapons.

In April, 1915, the Germans launched chlorine gas against the Allied troops on the Yser, with results which caused the gravest consternation. It is certain, and this is very important, that if the enemy had possessed the courage of his convictions—putting over a really considerable supply of chlorine and following up resolutely the advantage gained—the war would have ended in 1915. Fortunately for the Allies, however, German primary and secondary education is in the main classical and so does not help its victims to discriminate between theory and mere practice; the German High Command failed to realise what a powerful weapon they had in their hands and so did not apply it effectively.

I am not attempting to excuse the use of poison gas by the Germans; there is only one reason, but that an all-powerful one, why they should not have used it, namely, that they had solemnly promised not to do so. No purpose would be served by discussing here the moral depravity and the executive incompetency of the German Staff in this connexion, but one result of their action is clear. Chemical warfare has been introduced and has come to stay; the British Cabinet, the League of Nations, and all other authorities are alike powerless to prevent its use in any future serious war.

Public opinion concerning the effects of chemical warfare has been very ill-informed; the grotesquely misrepresented case laid before the public is well stated in a letter which appeared in *The Times* of November 29, 1918, signed by eight of the most highly placed members of the British Medical profession, namely, the Presidents of the Royal Colleges of Physicians of London and Ireland, the Royal Colleges of Surgeons of England, Edinburgh, and Ireland, and the Royal Faculty of Physicians and Surgeons of Glasgow, together with the Regius Professors of Physic in the Universities of Oxford and Cambridge. Several of the offices here concerned are Crown appointments, and this fact, together with the eminence of the signatories, gave great weight to the document. The letter urges that the Comity of Nations should prohibit chemical warfare and states that "the use of gas is self-condemned for the following reasons: It is an uncontrollable weapon, whose effects cannot be limited to combatants; it is an 'unclean' weapon, condemning its victims to death by long-drawn-out torture; it opens the door to infinite possibilities of causing suffering and death, for its further development may well

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lead to the devising of an agent which will blot out towns, and even nations."

The fact is that poison gas is far less fatal and far less cruel than any other instrument of war. One of the greatest discoveries made by the Germans was that "mustard gas" is a more efficient agent than any previously employed in chemical warfare for causing casualties; the introduction of this material led to an appalling lengthening of the casualty lists, and the fact that the French, Americans, and British had in sight an overwhelming production of this formidable substance was a large factor in determining the Armistice. Amongst the "mustard gas" casualties the deaths were less than two per cent., and when death did not ensue complete recovery generally ultimately resulted; it is unnecessary to dwell upon this merciful result in its contrast with the proportion of deaths among the casualties from projectiles and with the numbers of maimed, crippled and shell-shocked we see around us every day. Other materials of chemical warfare in use at the Armistice do not kill at all; they produce casualties which, after six weeks in hospital, are discharged practically without permanent hurt.

We may pass over the implied suggestions in the letter that the ordinary instruments of war do not affect non-combatants, that the "unclean" weapon is the only one which condemns its victims to death by long-drawn-out torture, and that chemical warfare should be abolished in that, unlike other agents, it is capable of improvement. Most people know that great numbers of non-combatants were killed by high explosive shell; all who have watched the casualties passing from the front to the dressing stations recognise that projectile wounds are far more ghastly than the lesions set up by chlorine, and those who have seen Verdun and Ypres know what high explosive has done already towards the blotting-out of towns. In order to focus attention upon the argument now being developed it may be noted that, although accurate statistics are not immediately available, the gas casualties in the recent war numbered several hundred thousands.

Let us turn from this offensive weapon, which had a casualty-producing power of the comparatively small order just remarked, to that of preventive medicine, which was first employed effectively during the recent war. Every great soldier has realised that an army is limited in size by the difficulty of keeping it free from epidemic and communicable disease; previously this factor pinned the army dimension down to a unit of 100,000 men. When the resources of preventive medicine were properly applied the unit dimension became a million men. Preventive

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medicine made it possible to maintain 20,000,000 men under arms and abnormally free from disease, and so provided greater scope for the killing activities of the other military weapons; a competent observer gives 15,000,000 as the number of combatants killed in warfare between 1914 and 1918, and nine-tenths of this achievement is due to preventive medicine. Further, the keeping of these vast armies in health, with its accompanying disorganisation of civilian activities, led to the dissemination of epidemic disease among non-combatants in all quarters of the globe. The civilian mortality from the mysterious war form of influenza alone amounted to scores of millions; this death-roll lies at the door of preventive medicine. We see, at the present moment, large tracts of Europe and Asia famine-stricken with a mortality of thousands per day, as the direct result of the efficiency of preventive medicine in keeping the whole man-power of a great part of the world under arms for so long a period; this is, again, the responsibility of the military medical services. In fact, for each soldier kept in the field by the army medical services, 10 or 20 non-combatants died, and hosts more will die, many by "long drawn-out torture."

In this article I am endeavouring to establish some sense of proportion; whilst the surprise effects of chemical warfare aroused anger as being contrary to military tradition, they were minute compared with those of preventive medicine. The former killed its thousands, whilst the latter slew its millions and is still reaping the harvest. A perusal of *The Times'* letter in the light of the above facts will show that a far more powerful appeal to the comity of nations would have been framed if the words "lethal gases," "gas," "chemical agencies" and "gas warfare" had been replaced throughout by the expression "preventive medicine." There is, however, a further indictment against the letter.

The eight leaders of the medical profession referred to above are well aware that the military medical services, wielded as an offensive arm with such appalling consequences by their younger and still active colleagues, have brought infinitely more suffering upon non-combatants and neutrals than has chemical warfare or any other weapon; why did they address so misleading a letter to the public? It is charitable to suppose that they did not sit in conclave, discuss the bearings of the various appliances of modern warfare, and then draw up and sign this grave appeal for the abolition of chemical warfare; the letter bears internal evidence that its signatories had nothing to do with its compilation but merely signed it unreflectingly at the suggestion of some crazy propagandist.

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In December last the Executive Committee of the National Peace Council, in a resolution, noted "with profound regret that the British Government, as suggested by the Dyestuffs Bill and shown by the War Office appointment of a Research Committee, are contemplating preparations for the next war involving the employment of poison gas and all the latest possibilities of chemical discovery. It protests against this prostitution of science, and regards it as calculated to extend, perpetuate, and intensify the horrors of international strife." Here, as in the medical letter, may be detected the characteristic turn of phrase which marks the trail of the professional propagandist.

The influence of this publicity campaign is quite considerable. At the meeting of the International Red Cross Societies held at Geneva on April 5, 1921, it was decided to urge all Governments to sign an agreement, in addition to the Hague Convention, for: (1) The complete prohibition of the use of poison gas in warfare. . . and, in the House of Commons a few months ago, the Parliamentary Secretary to the War Office excused Government activity in connexion with poison gas research, offensive and defensive, in terms of almost abject apology.

At the present time every aspect of national defence is under consideration; the enormous problems associated with national security and national economy demand that the discussion shall be carried out openly and in such a manner that the public will realise the issues at stake and grasp at least the principles of the methods involved. In view of the magnitude of the interests which arise we are justified in asking the leaders of the medical profession to lay before the public the reasons which led them, at a moment when chemical warfare had been to a large extent responsible for ending the war, to throw the weight of their combined authority into a grave appeal to our statesmen for the abolition of a very humane, although new, instrument of warfare. This request is a reasonable one, because the document referred to is the only presumably official and authoritative statement of the case as against chemical warfare which has appeared and has naturally furnished the text for many attacks upon this arm; apart from inherent absurdities, the letter errs, in my opinion, in assuming that any one form of warfare can be more bestial than another.

It is, of course, possible that a League of Nations may be able to limit armaments; the magnitude of the industrial operations which must collaborate in the production of big guns or battle ships would facilitate the detection of an infringement of any convention. New and more potent

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agents of chemical warfare can, however, be elaborated in obscure laboratories and kept in secret reserve against the day when mobilisation gives the signal for mass production; this process is, indeed, in active progress. A distinguished chemist, Brigadier-General Harold Hartley, has told us that during the enquiry into German methods for making "mustard gas" which followed the Armistice, one of the respondents asked—"Why are you worrying about this when you know perfectly well that this is not the gas we shall use in the next war?" The Americans, who came into the war at their own convenient time, encountered chemical warfare when it had become fully established, and were thus more impressed by its potentialities than the other Allies, who had more or less grown up with this new arm. Of the total American casualties, about 30 per cent. were due to gas, and of these about 90 per cent. arose from skin burns; of the gas casualties 3 to 4 per cent. died, and something like 95 per cent. made complete recoveries. These facts impressed our transatlantic cousins. They have established a Chemical Warfare Service on a peace footing with a personnel of about 1,600 men, and have budgeted for an annual expenditure of four and a half million dollars on research connected with the development of the new weapon; they recognise that immediately an authoritative definition of chemical warfare is subscribed to by the members of any analogue of the Hague Conference much of the inventive power of Christendom will be devoted to circumventing the convention. This task will be an easy one in view of the great variety of effects producible by chemical agencies. In the late war many cases occurred in which high explosive shell liberated sufficient carbon monoxide to kill, and it will be a simple task to devise high explosive, a most honourable weapon, which will evolve large amounts of this excessively poisonous gas, against which all known protective masks are useless. Further, no reason exists why chemical shell should not be made which does not kill but produces local anæsthesia, causes violent sneezing for a few hours, or leads to some other form of physiological intoxication which may prove of great military value.

The questions which arise in connexion with chemical warfare call for judgment by an educated public opinion, informed by scientific men and instructed by men of affairs. At the first use of chlorine in 1915 our prelates implored the Allies not to soil themselves by retaliating upon the Germans in kind; had these sonorous voices been heeded we should inevitably have lost the war. Our medical leaders, posing as possessed of absolute knowledge of fact, have demanded the abolition of chemical warfare; these

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are neither scientific men nor men of affairs. All medical injunctions have to be reviewed in the light of a weighty judgment by Louis Pasteur, one of the most sagacious intellects which science has ever had in its service :—

" Malheureusement les médecins se plaisent volontiers dans les généralisations anticipées. Beaucoup d'entre eux sont des hommes d'une rare distinction naturelle ou acquise, doués d'une intélligence vive, d'une parole élégante et facile ; mais plus ils sont éminents, plus l'art les absorbe et moins ils ont de loisirs pour le travail d'investigation. Poussés, néanmoins, par la passion du savoir, propre aux esprits d'élite, et qu'entretiennent les relations de la haute société de plus en plus curieuse des choses de la Science, ils s'emparent avidement des théories faciles, spécieuses, d'autant plus générales et appropriées aux explications vagues qu'elles sont mal établies par les faits."

Democracy has provided us with a Government which is doubtless better than we deserve, and while we discuss our attitude towards the subject the Government has had to decide whether to refrain from or to persist in action concerning chemical warfare. It is satisfactory to know that our administrators are moving in accordance with the carefully framed resolutions which, after mature consideration and ample discussion, were sent to the Prime Minister and other members of the Cabinet by the British Association for the Advancement of Science a year and a half ago ; these resolutions strongly advocated the formulation of definitely organised schemes for national research on all scientific questions relating to warfare, public health, food production and national commerce and industry. It is, however, interesting to note that this country is devoting far less effort and money than is America to the development of that military arm which, with the air service, will dominate all future wars ; interesting because it would seem that the charlatan and the propagandist have screamed so loudly on the other side of the Atlantic that they stand revealed before the more thoughtful as a mere public nuisance. Here they are taken more seriously, and have certainly led us to pursue the study of chemical warfare with less ardour than has been shown elsewhere.

Notwithstanding limitations, we must conclude that our Government has done wisely in following the course pursued by other Governments, also potential members of that League of Nations which is to end all strife, and in deciding to prosecute the study of the modes in which chemical warfare can be best utilised in modern military operations.

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(From "RECORDS of the AUSTRALIAN MUSEUM," Vol. viii., No. 1, 1910.)

Walter E. Roth

NORTH QUEENSLAND ETHNOGRAPHY.

Bulletin No. 14.

TRANSPORT AND TRADE.

see pp. 1-17 and Plates I-III

Bulletin No. 15.

DECORATION, DEFORMATION AND CLOTHING.

Bulletin No. 16.

HUTS AND SHELTERS.

Bulletin No. 17.

POSTURES AND ABNORMALITIES.

Bulletin No. 18.

SOCIAL AND INDIVIDUAL NOMENCLATURE.

By WALTER E. ROTH

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NORTH QUEENSLAND ETHNOGRAPHY.

Bulletin No. 14.

TRANSPORT AND TRADE. [1]

By Walter E. Roth, ~~Magistrate~~ Commissioner of the Pomeroon District, British Guiana; late Chief Protector of Aboriginals, Queensland; Corresponding Member of the Anthropological Institute, London; Hon. Member of the Anthropological Societies of Berlin and Florence.

(Plates i.-vii.; Figs. 1-13).

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[1] Dr. Roth, when transmitting his MS., requested that the details of a few specimens in his collection left undescribed, might be added; these are now incorporated and distinguished by being placed within brackets. —(Ed.)

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I.—TRANSPORT.

1. As a matter of choice, the native will rather wade across a stream than go to the exertion of swimming it, and will often make a comparatively long detour to find a suitable ford. On occasion, the overhanging timber being suitable, he will climb over on the interlacing branches. Sometimes he may effect his purpose by utilising a log that happens to have fallen in the proper direction or to have been purposely placed there, such a natural bridge has a special name given it, and in the case of the Endeavour River Natives is known as walmba, the same term as is applied to the forked limb put against a tree in order to climb it, or to act as a sort of platform on which to rest, while cutting out a bees' nest, etc.

Though perhaps occupying country adjacent to the banks of a river, it certainly does not follow that its presence indicates any capability of the local blacks being able to swim. Both on the Burke and Georgina Rivers I noticed this peculiarity, which in the latter case was perhaps explicable by the fact that the lands on the further side were claimed by another tribe, and that consequently the necessity for crossing not having arisen, the art had either not been practiced or had fallen into disuse.

2. Where natives do know how to swim, the posture assumed varies in different localities, and will be described when dealing with the whole question of postures generally. If saddled with impedimenta these are carried, according to size, either in the teeth, on the head, or in a bark or dug-out wooden vessel propelled in front of them. When on the head, the weight is often balanced (as is usually the case when the transport is on land) by a head pad (KYI. CKn, mordi), made in the form of a thick circular ring, out of tea-tree bark, or grass; when a vessel is utilised, it is either one of the ordinary domestic water-troughs, "koolamons," etc., or else specially made for the occasion out of a length of bark tied up at both ends.

3. When about to cross any large stream, the native, if by himself, will guard against possible accident from crocodile or shark, by practising certain auguries, some of which have already been detailed[2]. When in company, such practices are usually discarded, all his companions swimming across in more or less close formation with a good deal of splashing and shouting. Where however necessity demands that a known crocodile-infested river has to be crossed, and there is no canoe, the black manages it by diving, a method which I had an opportunity of

[2] Roth—Bull. 5—Sect. 104.

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witnessing on the Lower Normanby River (Princess Charlotte Bay). Gliding silently below the surface of the water, he keeps close to the bottom ; if it is too wide, he loses no time in coming up for a breath of fresh air and down again : should he come across one of these saurians, he immediately stirs up around him the dark mud on the river bed, and makes good his escape very much on the same lines as a cuttle-fish when in danger. Similar precautions are taken in this same district when a black is diving for lily-seeds in any suspected pool, etc., there always being some friend of his or hers watching, either from the banks or an overhanging tree ; the latter, on seeing the shadow or long streaky film of fine bubbles indicating the approach of the reptile, immediately splashes the water surface violently with some heavy stick, etc., and so gives the signal to the individual below, who quickly makes up the bank by crawling and kicking up the mud as already described. The Princess Charlotte Bay Natives never consider it safe to swim even silently on the surface of these waters, however clear they may be, when crocodiles are about. In the neighbourhood of the Proserpine River, the blacks will sometimes drag a heavy hooked club attached to a long rope across the stream to make sure that there is nothing lurking below to endanger their crossing.

A river in flood is met by diving across close to the bottom, where the natives say the current is never so strong. In taking the water for diving from a height, I have only observed the position of feet first.

4. At the mouth of the Mitchell River, and some of the rivers to the south of it, as well as, I am told, on a few of the creeks to

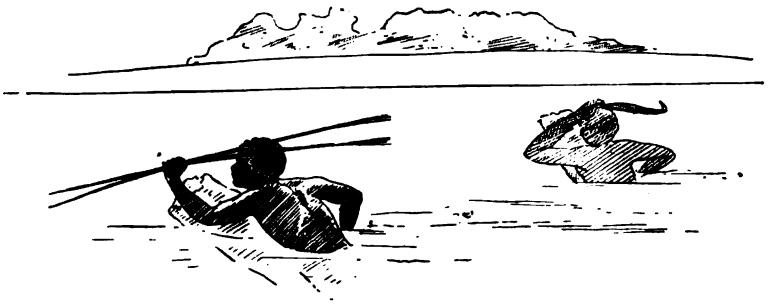

Fig. 1.

the northward, the cut trunk of some very light tree (? White Mangrove) is utilised as a float. Such a log is cut to about

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between five and six feet long, and when in the water can easily support the native who stretches himself upon it straddle-leg, with the thicker butt-end in front, somewhat in the position of a child riding a hobby-horse, and so paddles himself along; being able to keep his balance with the one hand, he can thus have the other free to carry his spears, etc. (Pl. i., fig. 1, and fig. 1). To see these logs for the first time, lying as they were here and there on the sides of the river-banks, and to suggest the purpose for which they were intended, would certainly have constituted a puzzle which, without ocular demonstration, I should never have guessed. Upon enquiry, as to how they had come to practise such a manner of transport the blacks told me that having the body so much out of the water, they could swim these estuaries with much greater ease. On the other hand, I cannot refrain from hazarding the opinion that the employment of the float in this manner may at the same time serve the purpose of protective mimicry from the attacks of crocodiles, which literally swarm in these waters, the thinner end of the float, which projects behind after the nature of a tail, giving the swimmer all the appearance, at no considerable distance, of one of these saurians; that the natives here have but little dread of these creatures may be guaged from the fact that on the occasion of a visit of the Government ketch 'Melbider' to the Mitchell River, eleven crocodiles were to be seen at one and the same time from the vessel's deck.

On the eastern coast-line, floating logs were in use at the Keppel Islands up to the time of my last visit in 1897—the few remaining survivors have since been removed—and were employed on those occasions when necessity forced the blacks to swim across to the different islands, and even on occasion to the mainland, the nearest distance from Big Keppel being at least six miles. Having floated a pandanus log, up to as much as thirteen or fourteen feet in length, according to the number in the party, the leader of the gang guides its lesser extremity with the one hand (say the left), and swims along with the other; the man behind, resting his right hand on number one's loins propels himself with his left; number three holds onto number two with his left, and swims with his right, and so on. The most skilful part of the manœuvre would appear to be in the proper use of the leg so as to prevent its impeding the progress of those behind. When the leader gets tired, his place is taken by another, and if all require a few minutes' rest, they have the float to hold on to.

5. Log-Rafts are met with among the scrub-blacks from the Tully to the Russell and Mulgrave Rivers, the coastal ones

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employing bark-canoes. On the Lower Tully, amongst the Mallanpara Tribe, the raft or warra-jan (Pl. i., fig. 2) is manufactured of two kinds of timber, the ponol and the pedu (*Grewia pleiostigma*, F.v.M.) Four, sometimes five logs of one or other material, are cut off blunt at each end, no attempt being made at pointing them so as to better resist the friction of the water, and tied, while afloat, with a length of lawyer-cane at the two ends only. The tying consists of two parts (fig. 2); first round the outside logs

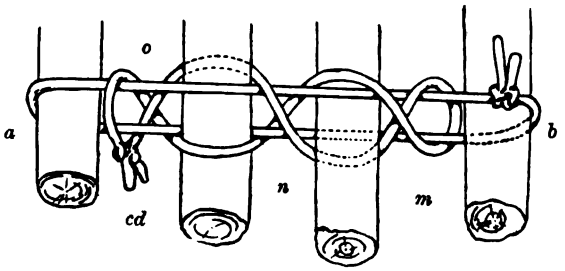

Fig. 2.

(ab), and fixing the cane at any spot suitable (x); and secondly, fixing together the upper and under portions of the cane itself, as well as the intermediate logs, by what may be called a frapping turn. This is effected with another cane, represented loose (cd) in the figure, which after being tightened up at the first interspace (m), has its extremities brought over through the next interval (n), tightening up again, and passing through the last intervening space (o), where it is finally fixed. These log-rafts are used rather in times of flood than at others, and are generally discarded after use. Sometimes there are a few small pieces of timber placed crosswise at one extremity, and on them a piece of tea-tree bark, sand, etc., may be laid; a fire can thus be kept burning. So far as the shape of the raft is concerned, sometimes the outer, sometimes the inner logs project; there is certainly no attempt at uniformity or any approach to making a bow or stem. No blade or paddle is used for its propulsion, only a pole which can both steer and punt it. It can be worked by one or two occupants; in the latter case with a pole on either side, but apparently no regular time is kept in their movements.

6. A somewhat different manner of Raft is to be seen on the Wellesley Islands. It is V-shaped (Pls. ii. and iii), composed of numerous light saplings ("White Mangrove") with butts all at one end, the larger logs underneath and at the sides, all tied together fore and aft, a cross-tie connecting the two loops to

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prevent them from slipping; over the wider portion of the raft is placed a bundle of dried grass, upon which the traveller squats and paddles himself along.

7. Bark-Canoes are made either of one, two or three sheets of bark, and in the main are river-craft, though on the East Coast they are often taken across to the neighbouring islands, and on the West Coast out on the sea, but only when the wind and weather are favourable.

Those built of a single sheet are found on the Gulf Coast, extending from the Batavia and Ducie Rivers down to the Archer River, and on the eastern littoral along an area reaching from the Johnstone River to a little below Cardwell. That their area of distribution on the latter coast was much further south than this within very recent times is rendered highly probable from the fact that the Keppel Islanders, who possessed no canoes when I first came amongst them, made me models of the single-sheet type to explain the craft they used to have in days gone by. These models were all the more interesting in that the only traces of bark canoes that were discoverable amongst the neighbouring mainland natives of the Fitzroy River were of the three-sheet type.

The manufacture of such single-sheet canoes is practically the same on both coast-lines, the existing differences being only in detail. At the Tully River (East Coast) the bark employed is obtained from at least five different timbers, known under their local Mallanpara names as nupa, kirau, kiri, yabandai, and kalkara, of which only the first has been identified as *Calophyllum tomentosum*, Wight. The method of stripping has already been explained[3]. I was further informed that the bark from these particular trees will strip more or less at any time of the year, i.e., not necessarily only at the end of the wet season when the sap is up. The sheet of bark, according to length required, having been removed, one of its ends is heated over a fire to render it pliable, and the whole length then folded long ways, with the outer side of the bark outwards; the end which has been heated is next clamped in a vice. This vice is made of two switches (fig. 3) tied tightly below around a stiff bundle of grass, bark, etc., so as to form a kind of fork, the 'leg' of which is implanted firmly into the ground; the 'arms' are subsequently tied over the end of the folded length, which is thus held tightly in position (fig. 4). The name given to this piece of apparatus is yuku nambil-nambil (yuku=tree, log, timber; nambil=to squeeze). A spreader or

Fig. 3.

[3] Roth—Bull. 7—Sect. 1.

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stretcher, any strong piece of timber, is next jambed into position so as to outline the future shape of the canoe, and also to serve as a guide for cutting off from the end projecting beyond the vice that portion which will subsequently constitute the bow. The cutting, which is effected with a strong sharp-edged shell (usually *Cyrena jukesii*, Desh.) is done from below upwards, through both portions of the fold simultaneously. It is not a straight incision, but curved more at the bottom than at the top, the operator standing face to face with

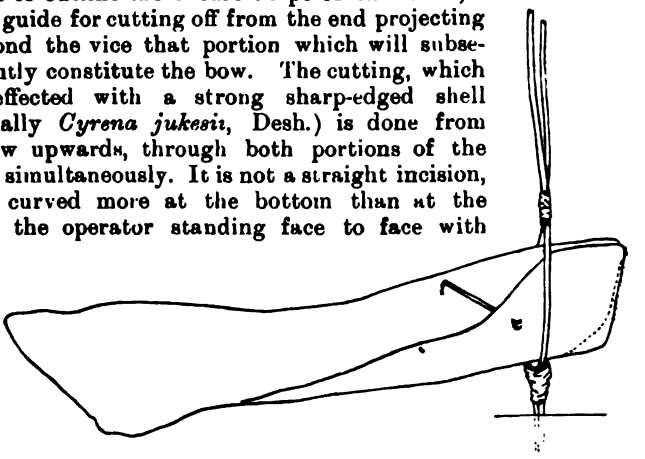

Fig. 4.

the extremity of the bark and cutting towards himself. After being cut into shape this bow end is finely sewn, or rather over-cast to use the correct term, with a split strip of lawyer-cane (*Calamus*), through holes which are drilled with an artificially-pointed wallaby bone. At the same time some tea-tree bark (which swells when moistened) is included in the over-casting of the extreme lower limit of the cut, where water is very likely to enter owing to the tendency to stretch and split consequent upon the extreme degree of flexion to which the bark-length is subjected. The sewing completed, the clamp is opened, and the other end of the bark-length similarly treated to form the stern, but in this case a wider spreader is used, the stern of these canoes being always made somewhat wider than the bows. Usually, by the time this stern of the future canoe is ready to be clamped, it has been already sufficiently exposed to the sun to make it pliable enough for working, otherwise, it is heated over the fire. With both spreaders still in position two strong withies, tapered at both ends to give greater flexibility, are attached to the inner top of either side of the vessel by over-casting with similar materials as before, and sewn in with them are unsplit lengths of *Calamus* or *Flagellaria indica*, Linn., the whole constituting the gunwale. It may be noted that though the withies start from the extreme limit of the stern, they do not as a rule reach quite up to the bow (fig. 5), on the other hand the unsplit *Calamus*, etc., surrounds both stern and bows completely. To strengthen

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the canoe, some five or six pieces of bark, after being bent well into position, are made to lie inside and crosswise; these are pressed against the inner surface of the vessel by means of as many ribs, formed of split cane, which are prevented springing out of position by being forcibly tucked under the gunwale. A single tie is now sewn across the top at about the centre of the vessel, so as to prevent the two sides springing apart (from the action of the ribs) after the removal of the spreaders, which finally takes place. Last of all, a hole is made at the top a little to one side of the bow, and through it is fixed the rope to which the anchor in the shape of a heavy stone or piece of rock is attached. Such a canoe (Pl. iv., fig. 2) has fairly abrupt ends, is usually small, being intended for one person only, and in the example which I saw manufactured took a little over a day to make, this including the removal of the bark from the tree. I am informed that it will last a long while provided it is kept away from the sun under a good shade; should it crack, the tear is sewn up with intervening tea-tree bark and covered with bee's-wax usually, with one or other of their gum-cements on occasion; when in use, the occupant assumes a kneeling position (Pl. iv., fig. 1) with buttocks resting on the heels, his weight as low down as possible, and paddles himself along by means of a small oval-shaped piece of bark or a large pearl-shell held in each hand, the movements of one following those of the other. This bark-paddle is called parambi, the same name as is applied to the crest of a Cassowary. He carries a shell-bailer and often a fire, or else the materials and sand for making it on.

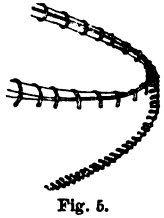

Fig. 5.

8. The single-sheet bark-canoe of the Gulf Coast, *e.g.* of the Batavia and Pennefather River Natives, is built on identical lines, a similar clamp being brought into requisition. The main differences lie in the absence of any special gunwale, and ribs, and the peculiar arrangement of spreaders and ties. To keep the sides in position two spreaders or stretchers (fig. 6), bluntly-pointed pieces of stick, are put in, their effect being counteracted by two, sometimes three, ties, made of twisted vine, which are fixed into opposite sides of the vessel and stretched by means of two forked sticks placed cross-wise, their bases resting on extra pieces of bark (fig. 7). Minor differences are to be found in their general size, which varies according as they are constructed to carry from one to five or six people, in their more sloping extremities,

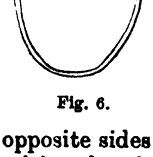

Fig. 6.

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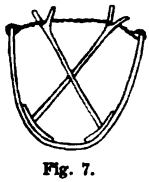

Fig. 7.

which ride the water higher than those on the East Coast, and in the fore and aft-portion being hardly distinguishable, the keel sloping away to the stem only a little more gradually at the narrower bows than at the wider stern. Furthermore, during the process of sewing up the cut ends, the over-casting commences at about the centre of the cut, the lower and upper portions being next respectively completed. The bark employed is obtained from *Eucalyptus tetradonta*, F.v.M. (NGG. arai-i). These canoes are worked with a single paddle (Pl. v., fig. 1, and fig. 8) held in both hands, and used on one or other side as may be required; the paddle (NGG. ngamba) is of interest in that it is an example of a 'natural form,' being constituted of the spatulate root of *Bruguiera rheedii*, Blume (NGG. tcherda), or *Ceriops candolleana*, Arn. (NGG. larchanama). The natives are very expert in balancing themselves on these frail structures and can even manage to stand up and throw a spear. The Rev. N. Hey, Superintendent of the Mapoon Aboriginal Mission on the Batavia River, has seen one of these canoes tipped over in the open sea, emptied of the water, and clambered into again by its occupants. When not in use, the vessel may be kept high and dry in the shade, or else left in the water. For transport on land it may be carried on the heads of one or more persons walking Indian-file.

Fig. 8.

8*a*. The names of the different parts of these single-sheet bark canoes on the Tully and Batavia Rivers, as applied by the local Mallanpara and Nggerikudi Tribes, respectively, are as follows:—

	Tully R.	Batavia R.	English equivalent.
Canoe as a whole..	ku-kai	truno	= bark
bows	ngorn	pai	= fore-head
stern	mono	mo	= buttocks
keel (unsewn portion) ..	chu-cha	mbo-ini	= back, dorsum
,, (sewn portion)	.. ..	andro-ana	.....
inside	kanga	....	= inside of anything
		churo	= median depression of chest and abdomen.
gunwale..	....	mbau-o	= adjacent breast & abdominal walls on either side of this depression.
spreader, stretcher.....	.....	lo	= any piece of wood.
tie	....	doan-donno	....
forked support for the tie	.....	la-ta	=trunk of a tree.

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9. Canoes made of two sheets of bark were seen on the Tully River and are said to require a much longer time for their manufacture. The keel is sewn first, the extremities only after alternately repeated wetting and drying. Their raison-dêtre is apparently the want of a suitably sized sheet to allow of folding; they have no special name to distinguish them from the ku-kai already described.

10. The three-sheet type of bark-canoe is to be seen at the present day in use amongst the natives on Whitsunday and adjacent islands (Pl. v., fig. 2), though within the present generation its limits extended certainly as far south as the mouth of the Fitzroy River, where the local Tarumbal Blacks made me some models in 1894, by which time canoes of any description had ceased to be in vogue. Cut into more or less of a diamond shape, one sheet forms the bottom of the vessel, the other two the sides (fig. 9). On the Fitzroy River the timber used was iron-bark, though the bottom piece was some times replaced by blue gum, and the completed vessel, from six to seven feet long, was known by the name of winta, koka or okka, and wallo. Mr. W. T. Wyndham[4], gives a short description of such a canoe in the old days from Central Queensland, and told me that it was the same as what he saw subsequently on the coast-line:—"There is one kind of bark-canoe they make in Central Queensland that I have assisted in making, and do not recollect having seen in New South Wales. The builder cuts three sheets of bark into an oval form, he inserts one sheet in a hollow in the ground, with the ends resting one on each side of the hole, he then puts a log or some other weight in the centre of the bark so as to cause the two ends to turn up, fire often being used to get them into the proper shape, the ends are then pared rather thin; the peel of some fibrous root (generally from a species of ficus) is used as a thread to sew the bark together; the two pieces of bark are placed on their sides, and the bottom sewn on to them by using an awl, a roll of the paper tea tree plant is used to caulk the cracks, two saplings are sewn inside to stiffen the outer rim of the canoe all round, and the okka is finished." The Whitsunday Island specimens usually have stretchers to keep the two sides apart. On occasion I have

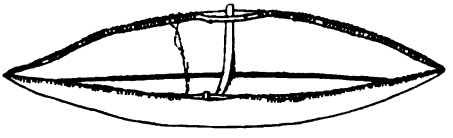

Fig. 9.

[4] Wyndham—Journ. Roy. Soc. N.S. Wales, xxiii., i, 1889, p. 40.

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seen a more or less central tie, or a tie fore and aft, in addition: fixed right forward in the bows is an upright fork upon which the harpoon rests. A single paddle with a lanceolate blade is used, and is certainly very different from the model made for me by the Fitzroy River Natives, which was somewhat after the nature of a gradually-tapering comparatively short stick, the thicker extremity being whittled down on the one side only, into a shallow more or less concave blade. The material used for the Fitzroy paddle was said to have been originally made from "brigalow," but more usually from the less heavy "bottle-tree."

11. Dug-Outs, in the condition met with along the Queensland Coast-line, are, like many other objects of Ethnological interest observable in Cape York Peninsula, of Papuan origin, and shew modifications in proportion with the distance from the area of main contact. At the same time it must be remembered that, certainly within the last eighty years, the Torres Strait Islanders (all of them Papuans) would travel south a long way down the Barrier Reef during the north west season, and return with the south east. In its original form, the dug-out canoe consists of a body with two outriggers, of which the suppression of one constitutes the primary modification, their method of construction (attachment of boom to float, etc.), forming the secondary. The body—the 'dug-out' as its name implies—is made from a suitable tree-trunk fashioned more or less at each end into a recognisable bow and stern respectively, and hollowed out with native-gouges, etc., and firing, as already described. The timber used varies with what is available in the different areas:—Thus, on the Endeavour River I found it to be *Bombax malabaricum*, D.C. (KYI. nanggarbura), *Excœcaria agallocha*, Linn. (KYI. melaba), *Alstonia verticillosa*, F. v. M. (KYI. morrangal), and *Sonneratia acida*, Linn. (KYI. pornupan); at Cape Bedford, *Canarium australasicum*, F.v.M. (KYI. gundar), and *Gmelina macrophylla*, Benth. (KYI. detchi); at the Batavia River *Bombax*, etc. It is distinctly a sea-going craft as compared with the bark-canoe. The original form of double-outrigger dug-out is found on both shores of the Cape York Peninsula; at the Batavia River only, on the Gulf side, and in the neighbourhood of Cape Grenville on the east coast. It is noteworthy that now and again during the north west season foreign dug-outs are washed ashore, at the mouth of the Batavia.

12. On the Batavia River, the outer side of the body of the dug-out is but little worked, except of course at the ends, where there is a projecting ledge beyond the excavated part (fig. 10); that at the bows forms a sort of platform, that at the stern a kind of lip,

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with the result that the line of keel makes a somewhat graceful angle with the former, but an almost abrupt ending with the latter. It is on the projecting platform that the hunter stands

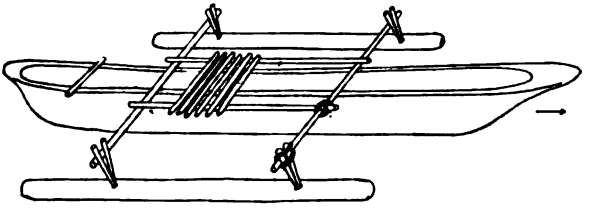

Fig. 10.

when on the look-out for turtle, etc. It was ascertained that the butt end of the tree-trunk ultimately forms the bows, which accordingly ride wider and higher when floated. The greatest breadth in the bilge is not very markedly larger than the space between the gunwale; the sides tumble in but slightly. Two booms are fixed cross-wise over the body (fig. 10), at about between the middle and outer thirds (the anterior third being the greater), by means of a rope passed through a hole drilled in the gunwale, and their ends are fastened by pegs to the float lying at each side; each set of two pegs, lying on a forward slope, is wedged below into a single mortice in the float, while above, its separated components are tied to the front of the boom. When a central staging is required, this is built up of two sticks tied parallel with the sides of the vessels, on to both booms, and smaller pieces in close apposition laid upon them transversely. The occupants, other than the one standing on the projection at the bows, sit either on the booms, on pieces of wood laid across the gunwale, or the stern ledge; there is of course room for them to sit only one behind the other, and if there is but one man steering he will have his place at the stern. The timber used for the float is not usually the same as that employed for the body, but of a more buoyant variety.

13. From Night Island down to Claremont Point, the afterboom is close to the stern (fig. 11), both booms being made to pierce the gunwale over which they are lashed to pegs driven through the sides below. Furthermore, the extremities of the booms are lashed on to the float direct, without any intervening pegs, an arrangement whereby the whole centre of gravity of the vessel is raised, the consequence being that the occupants have to squat in the bottom of the canoe (Pl. vi., fig. 1). There may be a small peg forward, to attach the line to. The paddle, worked in all

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dug-outs with both hands, on either side of the canoe alternatively, is fairly similar in all these northern types, with a long comparatively-narrow blade.

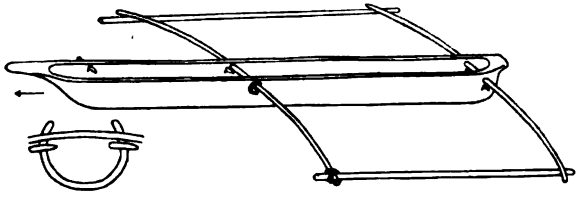

Fig. 11.

14. From the Flinders Group down to Cape Grafton there is a suppression of the left (port-side) outrigger, and following upon this—to ensure rigidity of the surviving float, an increase in the number of booms; to restore the centre of gravity of the body to the vertical is the intervention of comparatively large pegs between the boom-extremities and the float. At the same time, travelling from north to south, the stern projection gradully becomes more and more developed, until it closely approximates that of the bows, both extremities simultaneously changing from oval to square. The booms are all double, *i.e.*, in sets of two, and form a staging on to which the spears and harpoons may be laid or tied. On the authority of reliable natives I learn that Cape Grafton constitutes the southern limit of the dug-out, and that any such vessels found below this are not of local coastal manufacture.

15. Between the Flinders and the Endeavour Rivers two wash-boards are lashed on to the outer sides of the gunwale, with or without an intervening coil of tea-tree bark, and through their upper free margins the double booms are pegged (figs. 12 and 13). Though I have spoken of these narrow planks as wash-boards—and

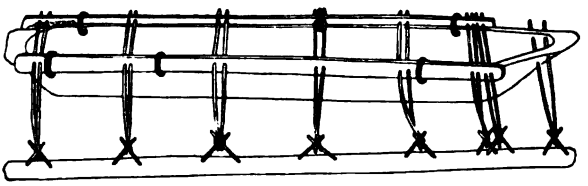

Fig. 12.

they probably serve that purpose—I fail to understand their signification unless they give indication of the lateral supports of

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the Papuan central staging: they have already disappeared at the Bloomfield River, where the booms pierce the gunwale direct (Pl. vi., fig. 2). The number of double booms will depend upon the size of the vessel, not less than four nor more than eight having been observed, a double one occasionally being made to pierce the extreme bows direct; their two components are lashed—one above, the other below—to the angle formed by the tops of the crossed pegs morticed into the float. Two double-booms are sometimes placed in very close apposition. At Cape Bedford, where the best specimens of canoe are to be seen, and whence the cast-offs and inferior ones are traded to Cooktown, the pegs are made from a special timber (KYI. dadetchin), while the floats are cut from a peculiarly light wood which is cast up on the beach, and preserved until required. The bow-end of the dug-out being made from the (wider) butt-end of the tree, it happens that the distance of attachment of the float from the side of the body is somewhat nearer in front than behind: in other words, the total width of the vessel as a whole is practically the same fore and aft, an arrangement which would appear to be advantageous. Here at Cape Bedford, the dug-out is generally dragged down to the water's edge by three individuals, then put in the shallow water, and punted along with two poles—one at the bows, the other at the stern—until such time as the water is deep enough for the paddles to be made use of. At Flinders Island in 1902, I saw a dug-out canoe with stretchers placed within it cross-wise apparently with the object of preventing the sides approximating too much, an arrangement which recalled the crossed forked sticks supporting the ties in the Pennefather River bark canoes. The Bloomfield River dug-outs only differ from the Cape Bedford and Flinders type in the absence of wash-boards.

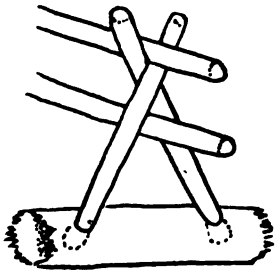

Fig. 13.

16. From the Mossman River down to Cape Grafton the dug-out is cut very square at either extremity (Pl. vii.), it often being very difficult, in the absence of the outrigger, to distinguish bow from stern, the former if anything being the larger; neither is raised above the level of the body. The space between the gunwale is extremely narrow, the sides being cut to overlap; the occupants sitting on the double-booms are obliged to have their legs crossed one over the other, and yet I have known five or six people at

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one time travelling all the way from Port Douglas to beyond Cairns in this apparently uncomfortable and cramped position. This variety of dug-out can be made from at least five kinds of timber, and will range up to fifteen or sixteen feet in length. I am doubtful as to the original local type of paddle[5].

17. I attach the native names of the different parts of these dug-outs at the Batavia River (Nggerikudi language) and Cape Bedford (Koko-yimidir language), together with the meaning of the words where known.

Part.	Batavia R.	Cape Bedford.	Meaning.
Dug-out (as a whole)	partara	wangga	.....
Body	.....	banchirn	.....
	churongganna...	.....	= any excaxation or hollow.
,, platform at bows	or-kana	.....	.....
,, bows	pai	.....	= fore-head.
	.....	wagga	.....
,, stern	mo	.....	= buttocks.
,, keel	.....	guramun.....	.....
		mo-ku	= backbone.
,, inside	mbo-ini	.....	= the dorsum.
	.....	wau-wu	= inside of anything.
	churo	.....	= middle line of sternum and abdomen.
,, outside	mbau-o	.....	= adjacent portion of breast & abd. walls on either side of this line.
	.....	yirmbar	= rib.
,, wash-board	.....	yirmbar	=? (cf yirmbi=lips)
Boom	.....	dabbul	=? (cf tabul=nose-pin)
	ar.....	.....	= hand
Float*	ar-temma	.....	= little finger
	.....	darman	.....
Pegs	.....	kanna-kanna	=? (cf ga-na=digging-stick)
	landru i	.....	= any splinter.
Rope for tying	pro-alatanna ...	gumbin	= any rope or string.
Paddle	.....	biribe	.....

18. I have purposely refrained from making any notice of the Torres Strait Island sailing craft (dug-outs), which although visiting the neighbourhood of Cape York, are of Papuan interest,

[5]The Kungganji Blacks of Cape Grafton speak of the float as bunul, the local term for mullet, indicative of its habit of skimming along the surface of the water.

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and do not come within the scope of a work dealing with Australian Ethnography. At the same time mention may be made here of the toy sailing boats made by the boys at Mapoon (Batavia River), with a single outrigger, always on the weather-side, which can be shifted from port to star-board and *vice-versa* as occasion requires; how far this innovation is due to civilising influences under missionary auspices, it is impossible to say.

At Cape Bedford the blacks have native names for European made vessels. A steamer is known as gol-ngoi, but the actual etymology of the word is not known; a boat is called yulal, a term signifying any flat piece of wood, and so applied to the planks with which it is built.

19. In the Brisbane District[6] a canoe was called kundul, the same term that was applied to every kind of tree-bark except that of the tea-tree, which was known as rguduru. The tree which was particularly used for making canoes was the bulurtchu or "bastard mahogany," the bark of which did not split, but when this was not obtainable recourse was had to the diura, one of the "stringy-barks," though this was liable to crack during the progress of manufacture. The canoe was always made out of one sheet of bark, from ten or twelve to as much sometimes as twenty feet long, which was removed from the tree, during spring-time, as follows:—The native would climb up to the necessary height and make a deep transverse cut the whole circumference of the tree, with a vertical one where convenient; while still up, he would pick off all the rough outer scales with a small spatulate pointed stick (which had its special name), and as he descended lower and lower would both lengthen the vertical cut, and peel off the bark, finally cutting it off below after having been thus cleaned. When removed, this sheet of bark was tied round at each end to keep it funnel-like, fires lighted inside, and the whole piece kept revolving, not only to prevent it catching alight but also to get it uniformly heated. This process rendered the bark more pliable, with the result that when subsequently the men standing at either extremity bent each up, it could easily be crinkled, folded, and skewered, in a manner almost identical with the pleat-type of bark trough,[7] save that the adjacent surfaces of each fold were not pressed into such close apposition. The gunwale was strengthened by fixing along its inner edge a long withe of wattle (*Acacia*, sp.) or nannam (*Malaisia tortuosa*,

[6] From information given me by Mr. T. Petrie.

[7] Roth—Bull. 7—Sect. 58.

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Blanco), and overcasting with a split length of yurol (*Flagellaria indica*, Linn.), which was also similarly employed for overcasting the two wooden skewers. The bark vessel, as now constituted, was inclined to curl in at the sides with the heat of the sun; this was counteracted by means of a stick placed cross-wise, which was prevented slipping by tying its nicked ends to the under surface of the gunwale. If a small canoe, the cross-piece was fixed at the centre, but if large, one would be placed fore and another aft; both ends of the canoe were similar and indistinguishable. The vessel was propelled by the individual (male) standing up in the centre and using a long pole, up to ten feet long and a couple of inches diameter; it was a sort of punting movement (not touching bottom of course), the pole being used on one side of the vessel alternately with the other according to the course to be steered. Some of these big canoes would carry as many as ten people, but with the larger vessels, one man would usually punt at the bows, and another at the stern; the passengers always sat low down on their haunches at the bottom of the boat. In the smaller canoes, there might be two or three gins by themselves, especially when they went for short distances, to the little islands for crabs, oysters, and cobbra. In all these vessels there was always a fire kept glowing on some clay at one end, and, in case of leakage, a shell-bailer[8] or niugam (*Melo diadema*, Lamk.), and some whitish clay[9] which, if necessary, would be plugged into the split. Canoes were identical whether intended for fresh or salt water.

II.—TRADE AND BARTER.

1. On the Bloomfield River (*R. Hislop*), the articles of home-production for trade and barter were dilly-bags, spears, wommeras, edible pipe-clay (within recent years), best kind of fighting-stick, shields and swords (in the old days), several varieties of gum-cements, and red ochre. These would be bartered for stingaree-spears, shell-ornaments, yellow ochre, edible pipe-clay (in the old days), shields and swords (in recent times). There were no particular individuals to effect the exchange, each one acting on his own behalf, nor were there any restrictions as to which of their neighbours they might barter with. The principal time of barter was during the laying-season at King's Lake country, *i.e.*, whenever there happened to be a sufficient supply of

[8] Roth—Bull. 7—Sect. 55.

[9] Roth—Bull. 7—Sect. 15.

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food to attract them[10]. There was apparently no conception of relative values, and though not a regular practice, members of the same tribe would interchange.

2. At Princess Charlotte Bay, the Koko-rarmul of the Morehead River give the Koko-warra (whose 'country' extends along the course of the Normanby and Deighton Rivers) reed-speers, iron-scraps, European tomahawks, etc., getting in return melo shell, grass-reed-spears, nautilus-shell necklaces, stingaree spears and fishing-nets. The Endeavour and Bloomfield River Blacks travel up in the direction of the Laura River, and supply the Koko-warra with red-ochre, white-clay, grass-tree spears, etc., which are paid for with the same articles as are supplied to the Koko-rarmul.

3. The Cape Bedford Blacks send out or export iron tomahawks, iron digging-sticks, nautilus-shell, different kinds of dilly-bag, pearl-shell chest ornaments and melo-shells. In return, they obtain forehead-bands, kangaroo-tail sinew, kangaroo bones (of a certain kind to be specially used for making bone awls), quartz-tipped spears, bark troughs, and a rough kind of fixed grind-stone. They travel in barter along the Northern Coast-line as far as, very probably, the Flinders River. They only come south to the North Shore (Endeavour River) encampment, opposite Cooktown, owing to their employment in the township, but this is only of late years. Captain Cook[11], it is noteworthy, when speaking of the Endeavour River Natives, is made to say :—"They had indeed no idea of traffic, nor could we communicate with any of them—they received the things that we gave them, but never appeared to understand our signs when we required a return."

4. For purposes of trade and barter it may be said that the Cairns, and until recent years, the Cape Grafton Blacks travel along the coast-line between Port Douglas and the Mulgrave River ; the Barron River Natives wander up the coast as far as Port Douglas and inland up to Kuranda and Mareeba ; the Russell River boys 'walk about' to the Pyramid Mountain, the Mulgrave and Johnstone Rivers, and Cairns ; whilst the Johnstone River Natives travel to between Clump Point and Liverpool Creek. Dealing now solely with the Cape Grafton Blacks, it

[10] In the Boulia District, it would appear that the trading season commenced with the full maturity of the Pituri plant, the local narcotic (see Roth—Ethnol. Studies, etc., 1897, Sects. 224, 229-234), while at Brisbane (*T. Petrie*) it was when the Bunya nuts were ripe.

[11] Hawkesworth's Edition, London, 1773.

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would appear that, prior to the institution of the Yarrabah Missionary settlement, the following list comprised the trade-articles of home production :—bicornual dilly-baskets (taken or sent to Port Douglas, the Mulgrave and Barron Rivers, Mareeba and Herberton), grass-bugle necklaces (for the Mulgrave and Russell Rivers), four-pronged fish-spears (Mulgrave and Upper Russell Rivers, Johnstone River, Clump Point, etc.), straight spear-throwers without the shell-haft (for the Mulgrave, Johnstone and Russell Rivers), bent or moon-shaped spear-throwers, large fighting shields, and long single-handed swords (all for the Barron River and northwards). The imports constituting the Cape Grafton northern trade, coming mainly from the Barron River and Port Douglas, included the following :—hour-glass woven-pattern dilly-bags, round base basket dilly-bags, beeswax necklaces, straight shell-hafted spear throwers, a variety of bamboo spear, square-cut nautilus-shell necklaces, and cockatoo top-knot head-dresses. The southern foreign trade, which used to come in either directly or indirectly from the Mulgrave River, comprised :—long swords, boomerangs, shields, oppossum-string armlets, and the large oval-cut pearl-shell chest ornaments, the last mentioned being said to have reached the Mulgrave River via Atherton and Herberton, whither it was believed to have been brought from the Gulf Country. The trading, amongst the Cape Grafton Blacks, was not carried out by any particular members of the community, the bartering being apparently personal, each one doing business on his own account.

5. Amongst the Tully River Natives, there are collective names for goods coming, not going, from one or other direction :—

(*a*) Irakanji (another name for the chau-an basket dilly-bag) implies collectively all the imports from the north and west.

(*b*) Kun-yin (another name for the kwi-auchal pearl-shell chest ornament) includes all the goods that come in from the south.

On the other hand, there is not much barter going on nowadays. To the Clump Point Blacks, these Tully River boys (the Mallanpara) give *Heleocharis*, getting the *Cryptocarya bancrofti* nut in return : to the Cardwell Natives they barter dilly-bags for which they receive bark-blankets, etc.

6. The Pennefather River Natives apparently do not carry on much in the way of trade ; they travel but a comparatively short distance up and down the coast-line, and never to any great distance inland. Their northern neighbours, the Mapoon, obtain from the northern shores of Port Musgrave the 'ombo' spears, for these they give bamboo and stingaree-spears, which they have obtained from the Pennefather River men.

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Bulletin No. 15.

DECORATION, DEFORMATION, and CLOTHING.

(Plates viii.-x., and figs. 14-30H.)

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1. Owing to the immense number of variations met with in the way of fashion, I have found it impossible to carry out my original intention of describing seriatim all local costumes, but propose, as far as possible, detailing the various ornaments and means of cover, constituting clothing, according to the portion of body decorated or covered. Even by this arrangement, difficulties are to be seen in that:—A necklet may be worn as a waist-belt; an article donned by a male may be forbidden to a member of the opposite sex, and *vice versa;* an ornament worn throughout one district with a special signification attached to it may have no meaning whatsoever in another; certain ornaments according to their materials of construction are found only in certain areas; a decoration donned on different parts of the body will convey different meanings, an article of dress essential in early life may be discarded with adolescence; and often nothing at all may be worn in contradistinction to a complete costume indicative of rank, virginity, grief, fight, etc. It has been found convenient to distinguish certain waist-decorations or covers as skeins, belts, or bands, circlets, and apron-belts according to the method of fixation in the first three cases, and the presence of a specially woven tassel-fringe in the last. Certain special decorations met with in the North-West District corrobborees, and initiation ceremonies[1], which there is every reason to believe are of foreign origin introduced during the course of trade and barter, have been omitted here.

As a matter of convenience, I also propose dealing in this Bulletin with certain deformations, *e.g.*, tooth-avulsion, nose-boring, digital amputation, and the so-called decorative body-scars, the true origin of which is somewhat doubtful.

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[1] Already described in Roth—Ethnol. Studies, etc., 1897, chapters viii., xiii.

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2. In the far North-Western Districts, the hair of the head—and especially is this the case with the males—is dressed with fat (snake, iguana, etc.) after growing a certain length, and put up very much after the style of the throms in a mop-broom. This facilitates not only its removal when required for subsequent use in making hair-twine, but also prevents its becoming too closely matted together. On the Eastern Coast-line, from Princess Charlotte Bay to Cape Grafton, the fashion is adopted only by the immediate relatives during the period of mourning, when the hair is allowed to grow previous to its being cut and manufactured into mourning-strings; with children, however, it is a matter of common routine, the throms fixed up with beeswax being still further decorated on occasion with the red and black Jequirety (*Abrus precatorius*) seeds. Hair may be kept short by singeing with fire, or by cutting with quartz-crystal (Bloomfield River), split cuttle shell (Keppel Island), various bivalves (*e.g. Perna*), stone-flakes, etc. At Brisbane, women's hair was always cut short, so as to prevent them catching hold of each other's when fighting—a very common habit this of tearing at the hair. They cut it with a sharp flint or the yugari-shell, its native name. The men's hair, combed out with a pointed kangaroo bone, was allowed to grow long, and when necessary the throms would be cut off to make hair-twine. Head-lice were considered an advantage; a man would often lie down with his head resting in his wife's lap when she would comb his hair, examine for the vermin, perhaps eat some, make a peculiar smacking noise when squeezing others, or, if it were perfectly clean in this respect, she would infect it from some one else's head. The beard was very seldom allowed to grow long. Each sex would have the entire limbs and body, except the genitalia, rendered free from hair by singeing with a fire-stick—parts which they could not reach, their friends would singe for them. The entire surface would then be smeared with charcoal and grease (*T. Petrie*).

3. The pulling out of the moustache or beard, or both, hair by hair, was not uncommon on the Tully River; either another man or his gin will do it for the individual interested, the depilation going on for hours at a stretch. No reason for the practice was forthcoming, though the introduction of razors and glass is superseding it. On the other hand some men would fancy a long beard, and accordingly retain it. Depilation was also practised on the Tully and Proserpeine Rivers; on the latter, when hair first shewed on the upper lip or chin, the young men would take hold of a bit of it here and there with a blob of wax,

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rub it well in, and so pull it out. The Cape Bedford natives encouraged the growth of the beard. In the Boulia District, the beard is often tied close to its base with a piece of twine to make it look flash, both at corrobboree time and on other occasions; in the Gulf country it may occasionally be seen waxed into one or two points (Pl. viii., fig. 1).

4. *Head-net.*—Where the growth of the hair is encouraged as the usual thing, a special head-net (Pl. viii., figs. 2 and 3) is used to prevent the throms from dangling over into the eyes: it is woven[2] on a circular basal strand, made of flax-fibre (*Psoralea patens*, A. Cunn.) and coated thickly with red ochre grease. It is manufactured by men only in the Boulia and Leichhardt-Selwyn Districts; its Pitta Pitta name is kulpuru, its Kalkadun one kantamara. Another form of head-net, an undoubtedly modern innovation, is made by the women throughout the same areas after the manner and mesh of a European fishing-net, with a conical blind extremity. Another contrivance which ostensibly served to keep the hair from falling over the eyes and face was the now extinct kalgo of the Cloncurry District. It is a long strip of Opossum skin with the hair left on, and about seven or eight feet long, made out of the back by starting from about the centre, cutting out concentrically round and round, the strip being subsequently stretched and dried. Winding it round and round the head, just above the ears, both men and women wore it, the custom being to remove it at night.

5. *False hair.*—On the Embley River I met with adjustable fringes, used by the women, and made of small throms of human hair fixed on a top string, the extremity of each tassel being weighted with a blob of beeswax. The Cloncurry District women and little boys for "flash" purposes wear an artificial whisker, formed of locks of hair cemented together at one extremity with Grevillea cement; such a wolla-kuja is attached on either side to the temporal hair in front of the ear, and hangs to a length of about two inches below the jaw.

6. *Forehead-nets.*—The forehead-net or miri-miri (Pl. viii, figs. 4 and 5)—a name common throughout North-West Queensland—is a spindle-shaped piece of netting quite a foot long, also worn to keep the hair well back, passing over the ears and tied together at the back of the head. It is woven after the ordinary fish-net pattern,[3] though no netting needle is used; in some examples, each

[2] Roth—Bull 1—Sect. 25.
[3] Roth—Bull. I—Sect. 23.

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individual mesh may be only one-eighth of an inch long. The material used in its manufacture is either human hair, flax-fibre, or Opossum twine, whichever is used causing variations in the mesh-size. The miri-miri is one of the badges of the last of the initiation ceremonies in the Boulia District, and can be worn by both men and women, subsequently to that stage, at all times, whether corrobboree or not. Made by males only.

7. *Forehead Feather-covers.*—The emu-feather forehead dress of the Pennefather River is of two varieties according to the species of bird, black (NGG. arába) or white (NGG. enggenjingana) from which it is manufactured. The feathers are interwoven at their bases by means of two continuous strands in the form of a chain-twist, and as a necessary corollary to the article being constructed on the flat, the chain-twist runs zig zag, alternately from side to side, just like the strainers and colanders from the Lower Mitchell River.[4] It is more or less mitreform, coloured at its base in horizontal bands of red and white, tied by its two extremities to the back of the head, and known to the Pennefather River Natives as tai-pe; though manufactured by women, it is used by men and boys when dancing and when fighting.

8. *Feather-tufts; Aigrettes.*—Feather-tufts or aigrettes are formed of various bird's feathers tied to a small sprig, which is stuck indiscriminately here and there into the hair; on the other hand, feathers may be used by themselves singly. Amongst birds thus utilised are the emu, white cockatoo, eagle-hawk, pelican, turkey, etc., but on the Upper Georgina River I have seen feather-tufts replaced by the tails of the *Peragale lagotis*, Reid.

The white cockatoo feather-tuft is met with almost throughout Northern Queensland, but is very common indeed in the eastern half of the State, and is used by males only, either at corrobborees, for decorative purposes generally, on fighting expeditions often. At Headingley (Upper Georgina River) it is stuck into the forehead-band (or armlet); between the Mitchell and Staaten Rivers, the Gunanni fix it upright on the top of the head and call it workai-a (fig. 14). The Middle Palmer River Blacks obtain the ornament (KMI. kwa-chil) by trade and barter from the Musgrave and Saltwater River Natives of the eastern coast.

Fig. 14.

On the Endeavour, Bloomfield, and certainly as far south as the Tully River, these cockatoo feather tufts may be made wholly from the bird's "top-knot," stuck into a large blob of wax

[4] Roth—Bull 7—Sect. 52.

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fixed on the back of the individual's head, giving rise to a gorgeous-looking yellow halo; at other times, especially between Cardwell and the Tully River, the head is first of all covered with blobs of beeswax, or else completely encased in this material, and the feathers then attached. Additional local names are: MAL. tchura, KYI. (Cape Bedford) mirimbal, KWA. arrirgurr.[5]

Emu-feathers are fixed with beeswax to the hair in both men and women at Cape Bedford.

On the Pennefather River, in times of mourning, members of both sexes attach a red feather, or two of a species of Blue Mountain-parrot to the forelock; this feather ornament, like the bird from which it is derived, is called a mantenuta. Similarly worn by women, under the same circumstances, is the red flower of the arányi, the local name of the Coral-tree (*Erythrina vespertilis*, Bentham).

9. *Knuckle-bones.*—Knuckle and similar bones from the kangaroo or dingo, and up to about two and a half inches in length, are fixed with cement by string to the tuft of hair over the temporal region, whence they dangle one on each side in front of the ears, in the Boulia and Upper Georgina Districts.

10. *Tooth Hair-ornaments.*—The double tooth-ornament[5a] is formed of an oval-shaped blob of cement into which a couple of incisor teeth of the kangaroo, rarely of the dingo, are fixed; the cement employed is that of the *Triodia* or *Grevillea*. There is an aperture in the base of the ornament through which a small lock of hair from over the centre of the forehead is passed and thus fixed, with the result that the tips of the two teeth rest midway between the eyebrows. On occasion it is made to hang from a forehead band instead. Though used by both sexes at corrobborees and other festive occasions, it is manufactured by men only in the Upper Georgina, Leichhardt-Selwyn, Cloncurry, Upper Diamantina, and portions of the Boulia Districts. In 1897, it was not being made at Marion Downs, neither on the Mulligan, Lower Georgina, nor Middle Diamantina Rivers. Local names for this ornament are—PPT. milka, KAL. yirrara, MIT. yirranggal. In the Burketown area is to be fouud a similar single

[5] At Brisbane the yellow top-knots made into bunches on wooden skewers, would be stuck into the hair tied up in a knot at the back of the head; used by "doctors" and great fighting men. Ordinary male mortals would just have feathers from the "Blue-mountain" or "Green" parrot, or (on the coast) swan's down stuck into the throms of the hair and beard. (*T. Petrie*).

[5a] See Roth—Ethnol. Studies, etc., 1897, fig. 253.

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kangaroo-tooth ornament attached to the hair at the temples, but here used by children only; on Mornington Island, a double tooth-ornament is attached to the temporal hair of the females.

11. *Shell Hair-ornaments.*—At Cape Grafton, around Cairns and Atherton, etc., a comparatively small oval-cut piece of pearl shell is fixed by means of beeswax to the hair of the beard, temples, or forelock. Nautilus shell (MAL. kopa-kopa) is similarly used on the Tully River.

12. *Fillets and Circlets;* Opossum, etc., twine.—From the fact that Opossum twine is met with very much more commonly in the western than in the eastern portions of North Queensland, fillets, etc., made from this material are but rarely to be observed in the latter portions of the State; that from the Tully River, where the Mallanpara call it mitin after the animal, is the only reliable example that I can call to mind. In the North-Western Districts, the Opossum-string fillet[6] is made of four separate circlets of Opossum-twine bound together flat by means of four ties, with the result that a band-like ornament. over a foot long, consisting of eight closely apposed strands, is produced; the extremities of this composite band are looped into the two tying-strings to be knotted at the back of the head. The Opossum-twine is of the winding type,[7] being spirally wound around a central human hair core, while, so far as the ties are concerned, they are always made of plant fibre. The strands, as well as the ties, are greased with red ochre—all Opossum-string ornaments are in fact treated in this manner throughout these districts. The fillet has sometimes been observed worn like a necklace in the Boulia District, and both as a necklace and armlet in the Cloncurry District. It is (1897) still manufactured, by males, in the former, but rarely now in the latter, and may be worn by either sex any time subsequently to the first of the initiation ceremonies. Its Pitta-Pitta name is mungkala, the same as applied to some other Opossum-string ornaments; in the Maita-kudi language it is the chabo of the Leichhardt-Selwyn District where exceptionally it used to be made of Rock-wallaby hair.

There are two varieties of the Opossum-string ring or circlet (PPT. mungkala, MIT. woppulara) in the North West Districts, according as they are single or double. In the former case, according as the central core is thick or thin, around which the Opossum-twine is spirally and closely wound, the diameter varies for different examples; in the latter, the two circlets are fixed

[6] Roth—Ethnol. Studies, etc., 1897, figs. 258, 259.
[7] Roth—Bull. 1—Sect. 15.

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together with two ties, at places more or less opposite. As usual, they are coloured red and greased. Single Opossum-string circlets are also common along the Lower Gulf of Carpentaria coast-line, where as a general rule they are left free from both pigment and fat; like the fillets of the same material elsewhere, they are made by men only, but here also used by men alone. GUN. minganda. On the Pennefather River Human-hair rope, NGG. prallatana, is manufactured by women for the use of the young men at initiation, when it is tied round the head.

13. *Fillet; Dingo-tail.*—In the Boulia District, a Dingo-tail may sometimes be worn over the forehead like a fillet and tied by strings at the back; sometimes feather-tufts may be stuck, and so supported in position, underneath it. The Dingo-tail was also worn by the Brisbane males, who called it gilla; used at corrobborees, fights, and first put on at the initiation ceremony. A twine fillet-band was similarly employed by the men. Tied round the forehead of the Kippas at the Kippa ceremony, and worn neither before nor after, was the snake-throttle which, after being cut out would be slit open and wound round a stick to keep it flat, when not in use *(T. Petrie)*.

14. *Fillet; Eel-bone.*—The Eel-bone ornament (MAL. wakai) of the Tully River and neighbourhood is formed of two such bones attached (fig. 15), with their concavities inwards, into a blob of beeswax. Several of such units may be attached to a length of fibre-twine, and tied across the forehead at the back of the head; sometimes, it may be fixed and used as a necklace, while on occasion a unit by itself may be seen attached to the fore-lock.

Fig. 15.

15. *Fillet; Nautilus-shell.*—The Keppel Islanders used to string together a few comparatively-large irregularly ovate pieces of Nautilus (yellam), each unit drilled with two holes, and tie the end at the back of the head, the shells resting over the forehead of the men; amongst the Whitsunday Island and Cape Grafton folk I also saw true fillets similarly made with double-drilled pieces, but I have never met with them anywhere else. In all three cases these ornaments were also worn as necklaces by the women. Elsewhere, the individual units composing these shell fillets are drilled with a single aperture, through which the double-strand connecting string is woven on a chain-twist pattern. As a general rule, the units are cut rectangular (fig. 16) on the Peninsula and Eastern Coast-line

Fig. 16.

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but oval on the Lower Gulf shores. It is true that oval ones are occasionally met with around Cairns, Cardwell and the Tully River, but there is reason to believe that they have been bartered from the Carpentaria coast, via the ranges and the Mitchell River. Worn by the men as fillets, by the women as necklaces[8], at the Bloomfield River, Cape Bedford, and Princess Charlotte Bay. By the time that the Princess Charlotte Bay specimens are bartered to the Middle Palmer, via the Musgrave River, they are worn by both men and women as necklaces only. Local names: KYI. (Cape Bedford) dirl-ngar, KYE. jil-nga, KMI. ni-ra.

16. *Fillet; Toad-stool.*—The only fillet of vegetable origin that I know of is that composed of pieces of the Red Toad-stool (*Polystictus cinnabarinus*, Fries.), used by the women at Keppel Island[9].

17. *Ear-piercing; Ear-rings.*—The piercing of the ears would appear to be peculiar to the Cape York Peninsula. On the east coast it has been observed as far south as the Tully River, but the practice is said to have been acquired here within recent years through the South Sea Islanders and bêche-de-mer fishing-boats. Captain Cook's voyage[10] has a record from the Endeavour River, where the natives were said to "have holes in their ears, but we never saw anything worn in them." I have observed it from Princess Charlotte Bay northwards, in males only, and also with nothing worn, the right ear at Saltwater River, the left on the Princess Charlotte Bay coast-line, and both at Night Island. Occasionally, the aperture may be so artificially enlarged (*e.g.* at the Coen River) as to allow of the loop so produced being thrown forwards over the whole organ. On the Gulf side, *e.g.* Pennefather and Embley Rivers, the males also alone have both their ears pierced, and may wear ear-rings which could however be more correctly described as tubes (Pl. ix., fig. 1), they being as much as two and a quarter inches external diameter and over four inches long. Such a tube (NGG. wà-amanu) is made from the *Bombax malabaricum*, De Cand. (NGG. baiperi), the core of which is hollowed out with a kangaroo-bone awl, the exterior being subsequently smoothed over with the rough leaves of *Ficus orbicularis*, and finally painted red. In the North-Western Districts,

[8] Sect. 35.

[9] Lumholtz figures a complicated brow-band from the Central Queensland coast, but I have never found anything like it (Among Cannibals, p. 331.)

[10] Hawkesworth's edition, London, 1773, p. 208.

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but alone among the Cloncurry natives and then solely amongst some of the older men, ear-holes in which a kangaroo-bone is said to have been worn, were present (1897); piercing however is never practised here nowadays.

18. *Nose-boring* ; *Nose-pins.*—The nose may be found pierced in both sexes, *e.g.*, Pennefather, Middle Embley, Palmer, Endeavour, and Bloomfield Rivers, Cape Bedford, and whole North West Queensland ; pierced in the males, sometimes in the females, *e.g.*, Princess Charlotte Bay ; in males alone, *e.g.*, Cape Grafton and apparently in the Wellesley Islands ; sometimes, in the males it being non-obligatory, *e.g.*, Rockhampton. The operation is very usually but not always performed by one of their own sex (Pennefather River), is sometimes connected with the initiation ceremonies (Bloomfield River, Rockhampton, Brisbane) while at others is absolutely independent of it (North West Districts, Princess Charlotte Bay). The implement used for the operation is either a pointed piece of bone or hardened wood. A short soft piece of "white wood" is often used immediately subsequent to, and continuously after, the operation during the next few days to keep the wound open ; it is finally replaced by the proper nose-pin. At the Macdonnell Electric Telegraph Office the wound is said to be dressed with human breast-milk. At Brisbane, the nose was bored in all males, either before or at the kippa (initiation) stage ; women's noses were never pierced. A drizzling rainy day was chosen, and the head held in the lap of an old man who would keep slapping the victim's ears, and shouting aloud while the operation was being done—the rain, the slapping, and the shouting being supposed to take the pain away. Another old man—one who had especially long nails on the left thumb and fore-finger was generally chosen—would then catch hold of the septum drag it down, and, just above, pierce through it a pointed skewer. This was next removed, and its place taken by a short (two or three inches) rounded piece of wood. If the victim proved obstreporous, his hands would be held down. Almost every day, he would go down to the water and, under the surface, slew the stick round and round in the wound, so as to prevent it sticking. This would continue until the aperture was healed enough to allow of a small flattened beeswax marble being inserted in it, and where it would be allowed to remain until the distended opening was completely sound. The ball gave the nose a very swollen and up-turned appearance *(T. Petrie).*

Nose-pins afford much variety in shape, size, and material. On the Pennefather River the half-moon shaped pin (NGG.

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i-mina) is made from the shell of the *Megalatractus aruanus*, Linn. Unless the shell is fresh, it is soaked for some two or three days in water; the operator, by means of a stone, then chips out the portion indicated (fig. 17), and grinds it down with water, the "rib" finally constituting the nose-pin. This imina is employed by men only, the women using a piece of grass. Similarly, between the Mitchell and Staaten Rivers, amongst the Gunanni, the men alone make and use bone ones (GUN. rau-wòr-injala) and the women grass-reeds (GUN. mo-banggir). Amongst other articles utilised I have observed the unfertilised flower-stalk of one of the Banksias (Bloomfield River), a piece of Bamboo (Embley River), or other kind of timber cut bluff at the extremities, spirally ornamented (Cape Grafton) or not, a feather-quill, etc. Wooden nose-pins may also be put in the ear-holes when such have been pierced. On the Embley River the nose-pin (wood or reed) may be decorated with a bead of the *Adenanthera abrosperma*, F.v.M., or *Abrus precatorius*, Linn., at either extremity; used by the women as a sign of mourning, sometimes by the men as a decortion. Local names:—Capes Bedford and Grafton, tabul; Atherton, yimpala; Tully River, imbala. PPT. milya perkilli (= nose large).

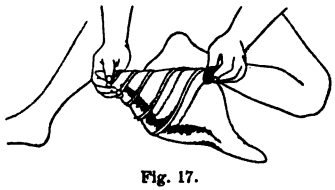

Fig. 17.

19. *Tooth-Avulsion.*—The knocking out of one or other or both upper central incisors is practised throughout the Peninsula, the North West Districts, at Princess Charlotte Bay, on the Palmer River and district around it, and on the East Coast, at the Bloomfield River, till very recently on the Endeavour River, and formerly as far south as the Keppel Islands. It is absent amongst the scrub-blacks of the Lower Tully. When present, it may either be connected with, *e.g.*, Keppel Island[11], Princess Charlotte Bay, or quite dissociated from any of the initiation ceremonies; the mutilation is not always obligatory with either sex. That the custom has been in vogue for ages past is probable from the fact that in none of these Queensland languages are there any *th*, *v*, *f*, or *s*, sounds, which require these teeth for their proper enunciation.

20. On the Pennefather River avulsion was customary in both sexes and performed after the individual had arrived at the full completion of puberty, after marriage, and in the case of a male

[11] On the authority of Mr. W. H. Flowers.

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only subsequently to having attended the initiation dances some two or three times. The operation is performed by one of the older men as follows, both sexes being mutilated at the same time. A pit about three feet in diameter is sunk, and a bush-fence constructed along three quarters of its circumference, near the break in the bush a group of elders sit, with a line of women on one side and men on the other, all lying upon their left elbows, each one coming up in turn to undergo the ordeal. One of the old men rests each individual's head on his open thigh, so as to be in a position convenient for pressing a thin wooden pencil on the particular tooth, and so hammering it out; as each tooth falls out he calls out the name of the individual's home, *i.e.*, the locality whence Anje-a brought his Cho-i[12]. The teeth are all thrown into the pit, into which the blood is also spat and then covered up, the patient's bodies being smeared over with charcoal.

21. In North-West Queensland, as well as up and down the Diamantina River, this custom of avulsion is gradually dying out; it is a mutilation which is perfectly voluntary, may be practised by both sexes, and most certainly at the present time has nothing whatever to do with any of the initiation ceremonies. In the Boulia District, the gums all round the teeth to be extracted are loosened with the thumb and finger nails; this loosening is then aided by biting hard into a stick held transversely in the mouth for a good ten minutes or so. The individual in squatting position, with head raised, now holds a strong stick vertically behind the two to be extracted, and pushes it firmly upwards and forwards, while a friend hammers away from the front with a wooden "chisel" driven by a heavy stone for a mallet. In the Upper Georgina District the patient lies on his back with head touching the ground, while his friend takes a stick which he presses against the teeth to be removed and hammers away until they are broken out.

22. Around Princess Charlotte Bay, avulsion is a preliminary to betrothal in the case of the males, and to consummation of marriage in the females. The right or left upper incisor may be removed; this is effected by hammering as before, with the individual's head resting on the lap of one of his mates, but here the subsequent hemorrhage is controlled by burning with a fire-stick The removed tooth is flung into water or buried. From this time onwards the boy leaves his mother's and sister's camps, to sleep with the single young men, though he continues to go

[12] Roth—Bull. 5—Sect. 68.

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to his mother's for his meals. Avulsion here always takes place subsequently to nose-piercing.

23. On the Middle Palmer River, the right central incisor is knocked out in both sexes, the left one being occasionally made to follow suit. At Butcher's Hill it is the left incisor, that is removed; here, the victim's eyes are covered so as to preclude the possibility of identifying the actual operator.

24. At the Bloomfield River, the young boys when about eleven or twelve years of age, get one or other of the central incisors hammered out, but this constitutes no ceremony, and is not absolutely necessary.

25. *Necklaces; Shell.*—The Pennefather River District provides a large number of shells that are utilised for necklaces. Square-shaped pieces of nacreous shell are made by breaking the shell into chips, each chip being next drilled with the onyi drill[13], its edges bitten with the teeth, finally ground down on white coral, and then strung on a fibre-twine. This form of necklace has the generic name of lankajana applied to it, whether manufactured from the lankajana (*Avicula lata*, Gray, a flat red-backed shell) from the wú-idi (*Meleagrina margaritifera*, Linn.) or from the arrò-anggati (*Nautilus pompilius*, Linn.); worn for purely decorative purposes, by women around the neck, by men over the forehead (as a fillet). The *Solen sloanii*, Gray, pierced at one extremity, and numbers of them strung on twine, is worn by women when in mourning, for children especially, either around the neck or from over one shoulder across to and under the opposite arm-pit; it is called ché-ra-a after the name of the mollusc, most of the other necklaces here being named according to the constituents of which they are composed. The manguru is worn by little boys and girls only, and made from the *Dentalium aciculum*, Gould; the shell is broken up into segments which are strung together, the whole having the appearance of European glass-bugles. The kò-chi (*Oliva australis*, Duclos) after being stood on its end, the apex gently hit with a wooden hammer, and then chipped off, thus forming an aperture through which the thread passes end to end of the shell (fig. 18); is worn by mothers on the death of an infant; instead of being used on the neck, round and round which it is wound, it may be slung from across and over one shoulder to under the opposite arm-pit,

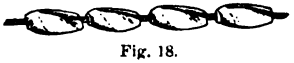

Fig. 18.

[13] Roth—Bull 7—Sect. 42.

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while at times it may be seen around men's necks when engaged in fight. The *Columbella pardalina*, Lamarck, is put to similar uses as the Oliva. Between the mouths of the Mitchell and Staaten Rivers, necklaces of the Dentalium (GUN. mandàba-daba), Oliva (GUN. manggo-anda) and (?) Nautilus (GUN. binjé-la) are manufactured and worn by men only, the last-mentioned being additionally used as a fore-head band.

26. *Necklaces; Opossum and Kangaroo Twine.*—There are two varieties of the Opossum-string necklace to be observed in the North Western Districts, one of which is constructed on a fringe-, the other on a belly-pattern. The former consists of a main supporting string (a composite basal strand), from which hang some dozens of tassels formed of one continuous length successively twisted upon itself and around the supporting string; each tassel is about four inches long[14]. It is manufactured in the Boulia, Leichhardt-Selwyn, and Cloncurry Districts, usually by women, is coloured red and primarily intended for use at corrobborees; when made somewhat larger than usual, as is sometimes the case in the Boulia District, it may be worn as a woman's apron-belt. Local names:—PPT. munamalyèri, KAL. and MIT. mittamiko. In the belly-pattern, all the Opossum-hair strands are fixed at either extremity to the tying strings[15], but such necklaces, once manufactured at Glenormiston and Roxburgh Downs are extremely rare; one specimen obtained from the latter station, though manufactured on the proper plan, had the Opossum-string replaced by cotton threads drawn from out of an old sock.

27. *Necklaces; Grass-reed and Pandanus.*—The Grass-bugle necklace is made throughout Queensland. In the North-Western Districts it is manufactured usually by the women and is the badge of the first of the initiation ceremonies, whence it can be worn subsequently, on any occasion, by both male and female. In its simplest form it consists of hundreds of grass-reed bugles threaded on a twine from twelve to sixteen feet long tied at its extremities; the bugles are cut into lengths of from about half to five-eighths of an inch and over, either by means of the sharp edge of a mussel-shell or a stone-knife. Such a necklace can be worn just as it is, as a coil wound round and round the neck, or else rolled up into a thick loop so as to make two bellies of it, the ends being attached to tying-strings[16]. In other cases the bugles may

[14] Roth—Bull. 1—Sect. 14, and Plate vii., fig. 6.

[15] Similar opossum-hair necklaces are found on the Tully River.

[16] Roth—Ethnol. Studies, etc., 1897—Fig. 267.

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be strung on a number of shorter threads, fixed at their extremities to the tying-strings, so as to form a single-belly ornament[17]; or again, two such bellies may be looped together, perhaps the commonest form[18]. On the East Coast the grass-bugle necklace is seen from certainly north of the Endeavour River to as far south as the Keppel River, and is made and usually worn only by women; the pattern followed is that of one continuous length of string. On the Tully River, natives of both sexes wear it. On the Lower Gulf Coast, the ornament is made and worn only by the female portion of the community. Local names:—PPT., KAL., and MIT. konupa, KYI. wanggar, KYE. yirko, GUN. manèr-gora (made from ra grass), MAL. waln-gara.

Grass-bugles amongst the Brisbane Blacks were threaded on a length of string knotted at either extremity; it was usually made by the old men and women, but mostly worn by men, at any time. It was called kulgaripin (*T. Petrie*).

At Princess Charlotte Bay a necklace (al-wûra) worn by the women and especially the younger girls is formed of strips of Pandanus leaf worked into a plait of from three to five strands[19].

28. *Necklaces (miscellaneous).*—Amongst unusual objects I have observed strung together, and worn as necklaces may be mentioned the "calcareous eyes" of a cray-fish, and the vertebral bodies of a young shark, on the Batavia River; and pencils of hardened beeswax attached to a top-string on the Daintree River. In one such specimen I examined at Cape Grafton, whither it had been bartered, and which the local Kungganji Blacks called o-mor, I counted upwards of one hundred and fifty pieces of beeswax (fig. 19), each about one and a half inches long, coloured white, and suspended by an attached twine eyelet to the tying-string; it was said to be used by men as a fighting ornament, by the women, as an ordinary decorative one.

Fig. 19.

29. *Cross-shoulder Ornaments.* — Attention has already been drawn to the fact that certain of the necklaces may also be worn as cross-shoulder ornaments, a method of fixation, *i.e.*, from over one shoulder across to under the opposite armpit, which in certain areas indicates a symbol of grief and mourning[20]. On the other hand, there are indeed here and there a few decorations only worn as cross-shoulder bands. Thus, on the Upper Georgina River, at Headingly, an Opossum-string cross-shoulder

[17] Roth—Ethnol. Studies, etc., 1897—Fig. 266.
[18] Roth—Ethnol. Studies, etc., 1897—Fig. 264.
[19] Roth—Bull. 1—Sect. 11, and pl. v., figs. 1-4.
[20] Roth—Bulletin 9. (Rec. Austr. Mus., vi., 5, 1907, p. 367.)

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piece (the kurmanjá of the Yaro-inga) is worn by males and females; on the Pennefather River a strip of Kangaroo-skin tied at the ends, forms an ornament[21] (NGG. do-ana) that is used by women only at any time. So again, the Pennefather River women may wear on any occasion a cross-shoulder band made of fibre-twine interwoven with the feathers of the Emu or a variety of Blue Mountain-parrot, the decoration being known respectively as the taipe-pra and taipe-mandenuto; but this may also be used by them as a belt or as a sucking-string[22].

30. *Chest and Back Ornaments.*—Most of the chest and back ornaments consist of a portion of Pearl-shell, Nautilus, or Melo, drilled to carry the string that suspends it over the chest. On the Pennefather River the Pearl-shell chest ornament (NGG. gamaga) is of two kinds; the shorter and rounder pieces are worn only by a mother on the death of her child, by females when dancing round a corpse (children sometimes using the half-broken ones), while the longer ornaments are worn by the men at corrobborees and on other special occasions. The outer layer of shell is removed by placing the specimen on the cold ground, face downwards, and covering carefully with hot ashes, after which the surface can be the more easily removed by grinding on a stone with water, when pearl-shell is scarce, the ornament may be manufactured here from *Malleus vulsellatus*, Lamarck. Further down the Gulf-coast, *e.g.*, between the Staaten and Mitchell Rivers, these iridiscent-shell chest decorations are worn by men only; the Gunanni terms for them, according to the species of shell, being binjé-la and pin-yertan. On the Eastern Coast-line at Cape Bedford, etc., the elongate form of it (KYI. komaral) is used by both girls and boys; on the Tully River it is usually worn by the adults, who speak of it as kwi-anchal. With regard to the Nautilus, this is worn between the shoulders of the men (fig. 20), between the breasts of the women, at Cape Bedford, and on the Endeavour, Bloomfield, Laura, and Middle Palmer Rivers. Owing perhaps to its comparatively fragile nature, I have not observed the regular bartering of this shell to any very great distances inland. Local names:—KYI. milbar, KMI. trila-elpán (same term as applied to the pearl-shell[23]).

Fig. 20.

[21] This strip of skin is cut from the flank of the animal (NGG. adaut-chuko), and the hairs left on.

[22] Opossum-twine (barbun) was worn similarly across the shoulders of the Kippas only, at Brisbane (*T. Petrie*).

[23] A piece of Nautilus-shell, the tulin, was worn between the breasts or shoulders, in both sexes, at Brisbane; it was much valued by the inland blacks (*T. Petrie.*)

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As a general rule, the *Melo diadema*, Lamk., is to be found worn more frequently inland than on the coast line where the Pearl-shell as a decoration is in the ascendent, the iridescence of the latter naturally proving more attractive and so reducing its export to a minimum. The melo travels no inconsiderable distances, *e.g.*, into the Boulia District whither I succeeded in tracing its course through the trade-routes as follows:—From the Gulf Coast-line between the Nassau and Staaten Rivers, where the Gunanni call it rō-anda, it is brought into Normanton whence it gets to the Nau-an Natives at Mullangera and so to the Upper Flinders and Cloncurry District aboriginals (*i.e.*, Wunamurra and Maitakudi), the Flinders ones bartering it to the Yirandalli Blacks around Hughenden; at the head-waters of the Diamantina River, at Kynuna, and at Hughenden, the Goa folk from Elderslie obtain it from all three sources, trade it down the river to Diamantina Gates and Cork, whence it is brought via Springvale into the neighbourhood of Boulia, where it is occasionally but irregularly seen worn on the fore-head like a Kangaroo-tooth ornament. At Roxburgh Downs and south of that station, as well as elsewhere, I have observed this decoration being imitated by chipping and grinding-down pieces of broken chinaware. Local names:—PPT. kulinjeri, MIT. chikara.

On the Pennefather and Embley Rivers, in fact on both sides of and within the extreme Cape York Peninsula, a flat circular shell chest-ornament may not infrequently be met with; this is made by chipping off and grinding down the base of the *Conus millipunctatus*, Linn., and finally drilling the aperture through which the string passes. Another shell, worn just as it is found, is the *Solarium perdix*, Hinds; the Pennefather Blacks speak of both these shells under the one name of dévi-dévi.

31. In the North-Western Districts, here and there, thick circlets of Opossum-twine, etc., may be thrown over the head and hang loosely upon the chest.

32. Amongst unusual articles I have seen worn regularly as chest ornaments may be mentioned the large Eagle-hawk's claws, two of which[24] are attached moon-shape-like into a piece of cement; two of such double-claw hoops may be fixed to the same neck-string. The claw is brought to Boulia from the north, both from down the Georgina River, and down the Burke and Wills Rivers; PPT. mingkara, KAL. pi-ko[25].

[24] For an illustration see Roth—Ethnol. Studies, etc., 1897, fig. 270.

[25] The testicles of the Kangaroo, with surrounding pouch and skin, after being removed and dried, were cut into slices, rubbed with charcoal, and suspended over the chest by a string passing through a hole at the edge (*T. Petrie*).

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33. *Waist-skeins.*—The human-hair belt, or preferably skein, found throughout North Queensland, except perhaps in the extreme Peninsula, consists of a long piece of double-plaited hair twine wound round and round the waist so as to form a thick skein; the resulting size may be guaged from the fact that a comparatively small specimen when unravelled, was found to measure a length of over twenty-six yards. One extremity of the twine is often attached to a little wooden peg, which, by its speedy recognition, enables the wearer to start unrolling all the more readily. Such a hair-skein into which the knife, tomahawk, etc., is often stuck, may not be removed from the body for weeks, perhaps months, at a time; its very nature precludes it from getting rotten through moisture. In the Boulia District it is one of the ornaments allowed to be worn by both sexes subsequently to the first of the initiation ceremonies; the men usually don it continuously from this time forwards, but the women only at corrobborees and other special occasions, though not necessarily even then. In most of the other districts it is the men only who are allowed to wear it, although in several where it is known to have once been in vogue, it is now discarded even by both sexes, *e.g.*, on the Endeavour River where, in Captain Cook's time[26], the men are stated to have had "a string of plaited human hair, about as thick as a thread of yarn, tied round the waist." Local names:—PPT. wa-kula, KAL. wanniga, MIT. u-rodo, the Yaro-ingo of the Upper Georgina calling it ai-tanja. On the Pennefather River, fibre-twine waist-skeins are wound around the belly and arms of women only, by whom they are perhaps more often used as mourning strings; they are very often coloured red, made of over-cast twine, and known as tanga-a.

34. *Waist-belts.*—[27] Among Waist-belts, *i.e.*, bands, etc., which are fixed in front or behind, there are one or two interesting varieties. Fixation anteriorly however is comparatively rare, the only example known to me being that of the Opossum-(or kangaroo)-twine waist-belt (KMI. aln-jo) of the Middle Palmer and Tully Rivers; in the former, the ends are attached in front by means of a knot passed through a loop, in the latter by tying. On the Batavia River, an Opossum-string (NGG. ogwar-

[26] Hawkesworth's Edition, 1773, p. 207.

[27] The Brisbane Blacks wore waist-bands made of Opossum- and Human-hair twine on the ordinary European fish-net pattern, three to four inches wide and from six up to nine feet long; the Opossum ones were worn at initiation by the Kippas, and subsequently on any occasion, the latter, netted by themselves, being used by the medicine-men only (*T. Petrie*).

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agana = name of animal) is used as a belt by the men, but as a cross-shoulder piece or necklace by the women[28]. The Penne father River District natives have a very pretty shell waist-belt made from the *Oliva australis*, Duclos, the native name of which cowrie (NGG. ko-chi) gives the name to the completed article. The shells are strung vertically as in fig. 21, upon a double top-string, and tightened together, as many as one hundred and seventy having been counted on the one belt; though manufactured and used by women, it may be worn by the males for decorative and corrobboree purposes. The same folk also possess a bright yellow-coloured belt made from the prepared outer cortex of the *Dendrobium bigibbum*, Lindl. (NNG. zu-la), the belt itself being called a tchi-li, made by women, the larger kinds are used as belts for the men, the smaller as cross-shoulder bands by the women, on all or any occasion, fighting, dancing, etc. The actual process of its manufacture (fig. 22) has already been described[29]; a variation has since been met with, which is formed of three strips of cortex and four threads.

Fig. 21.

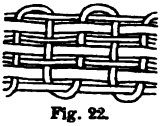

Fig. 22.

35. *Waist-circlets.*—A Waist-circlet is invariably put on from below up, great difficulty being often experienced in getting it into proper position. The Opossum-rope waist-circlet (MIT. mun-dolo) is met with in the Cloncurry and Flinders Districts, is upwards of an inch thick, and measures sometimes over a yard on its outer circumference. It is made of a thick skein of fibre —acting as a sort of core, around which a single external strand of Opossum-string (often replaced by fibre, etc.) is over-cast; a pattern representing areas of black bands is worked in with hair-twine in this outer layer. In the smaller varieties (*i.e.*, those for females) the internal core or skein may be made of human-hair twine instead of fibre, and there may be a few opossum-string tags, forming a thin fringe as it were, hanging down in front. It is worn by adult males at corrobboree time only, by young boys at any time previous to reaching the first stage of social rank, while that for a female may be worn on any and every occasion. On the Middle Palmer, at Cape Bedford, etc., Waist-circlets, with a fringe attached in front, (KMI. mi-na, KYI. yirpi) are worn by the women only; the circlet portion is usually manufactured on a core of human-hair overcast with Kangaroo-

[28] I am ignorant of the method of attachment of the two extremities.
[29] Roth—Bull. 1—Sect. 12 and pl. vi., fig. 2.

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or Opossum-hair twine, while the tassels[30] composing the fringe are often made of fibre-twine (*e.g.*, *Careya australis*, F.v.M.). The Bloomfield River women wear a circlet of human-hair or fibre-rope around the waist; it is commonly met with on the older females, and those who have suffered any trouble over a recent accouchment, though in all cases it is looked upon[31] in the light of an ornament, especially when some red colour is woven into it.

36. *Apron-belts.*—The separate tassels forming the apron of the Pennefather River Apron-belt (NGG. andré-ata) are made on the same pattern as those of the Cape Bedford Waist-circlets; they are strung on a top-string (NGG. ngora) stretched between two sticks, during their process of manufacture, and made of *Careya australis*, F.v.M. (NGG. kuiperi) twine. On completion, the tassel apron is rolled up with the roots of the *Morinda reticulata* (NGG adá-a) which stains it a yellowish red. The apron varies in depth from two to five inches and is worn double, a loop being inserted in the top-string where folded over, the two ends of the top-string being passed through it as represented in fig. 23, the apron being thus worn double. Such an apron is worn only by the females from the time they begin to toddle and are only discarded at full puberty; the reason given for such a practice is that the exposure of the female genital is indecent, but that when nature provides the hair no further artificial covering is required[32]. In the hinterland of Princess Charlotte Bay, the Apron-belt is worn only by the women, though I have occasionally observed it put around their necks; it is made of vegetable fibre (*Barringtonia racemosa*, Gaud., *Bombax malabaricum*, De Cand., or *Malaisia tortuosa*, Blanco), on the same pattern as the Pennefather River tassels already mentioned. The Bloomfield River women sometimes wear a similar Apron-belt, but this has only been introduced of late years[33]. Along the coast-line between the Fitzroy River and Broadsound, the women used often to wear a four or five inches deep apron belt of Opossum-twine. The larger sized example of the Opossum-twine munamulyeri necklace has already been noted as occasionally worn by the Boulia District women in place of an apron-belt.

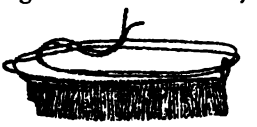

Fig. 23.

[30] Roth—Bull. 1—Figs 4, 5., pl. vii.

[31] According to Mr. R. Hislop.

[32] The same practice with the same reason given was in vogue amongst the Brisbane girls with the Opossum-twine apron belt (*T. Petrie*).

[33] According to Mr. R. Hislop's opinion expressed in 1898.

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In the Upper Georgina area, at Headingly, the Yaro-inga females wear the Opossum-twine apron-belt, the murrtara, either round the waist or neck, the males donning it as a necklace.

There is a male corrobboree waist-apron belt found in the district around the Batavia River, with the apron portion formed of Pandanus strips (fig. 24), attached to the top-string in a manner different to what has been found anywhere else in Queensland; it would be interesting to learn what the arrangement is in the corresponding New Guinea female article.

Fig. 24.

37. *Hip and Tail Pieces.*—Throughout the North Western Districts, in times of corrobboree and other occasions for rejoicing, and on wife-hunting expeditions, etc., certain ornaments are fixed or rather suspended from the waist-skein in the case of males only. Thus, the pingkara of the Boulia Natives is a bunch of Eagle-hawk feathers tied tightly round at their shafts into the form of a feather-duster and attached by the quill-end on either side of the skein so as to dangle over each hip; it is called a wan-pa by the Cloncurry boys, who let it hang down in the central line behind instead of at the sides. The Boulia tilyeri is a similarly bound bundle of Emu-feathers[34], but attached so as to fall between the fold of the buttocks; on the Upper Georgina River, the Yaro-inga may stick this bundle (kwalla-kwalla) upwards behind, such a position indicating the sign of sexual connexion when the wearer comes to steal a woman. The Opossum-string tassel (MAL. mitin) may similarly be suspended posteriorly on the Tully River; at other times it may be seen worn over the chest hanging from a neck-string. On the Tully River stuck upwards into the belt behind is the ombir, an ornament made out of White or Black Cockatoo, Scrub-turkey or Scrub-hen tail and wing feathers; the pinnae are pulled down on each side of the barb, and the barbs then tied up into a bundle, which when complete makes the whole article look something like a feather-duster. It forms a portion of the special fighting costume[35].

38. *Genitalia.*—The epilation of the pubic hair was practised by both sexes on the Proserpine River, but by females only, on the Lower Tully River. At Brisbane, most of the old women,

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[34] Practically identical with the fly-flicks described in Bull. 7—Sect. 48.

[35] At the Brisbane initiation ceremony, the Kippas wore a "tail-business" called wonggin (*T. Petrie*). [The death of Mr. *T. Petrie*, so often quoted in these pages, has just taken place at Brisbane in his 80th year. He was one of the first settlers in that district, and a local authority on Aboriginal habits and customs.]

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rarely the younger, would cut off the pubic hair; it was said to be done for the convenience of the males (*T. Petrie*).

Phallocrypts, only used by males at corrobborees and other public rejoicings are formed either of pearl-shell or opossum twine. It is somewhat unfortunate that I introduced this term to express certain objects met with in the North Western Districts which I was not then aware were employed rather for purposes of decoration than for concealment.

The chikaleri is a flat, more or less oval, piece of pearl-shell, three to four inches long, fixed with cement to a human-hair twine which in turn is attached to the middle of the waist-skein in front so as to hang over the privates. This pearl-shell which I have only observed in the Leichhardt-Selwyn, Upper Georgina, and Boulia Districts, comes into these parts from the head-water country of the Georgina River, though from which portion of the coast it is originally brought I have not been able to discover; most probably through the Nassau and Staaten Blacks on the Lower-eastern Gulf-coast, they obtaining it by barter from further north.

The kumpara is the Pitta-Pitta name for the Opossum-string form of Phallocrpyt manufactured on exactly the same plan as the munamalyeri necklace which is subsequently wound in a spiral round itself, fixed in this position so as to form a kind of tassel, coloured red, and is hung from the waist-skein in front. Sometimes it is used in the hand as a fly-flick. It is manufactured in the Boulia, Leichhardt-Selwyn, and Cloncurry Districts by males only; the Kalkadun name for it is monaro, and the Maitakudi one tungga. These latter people under the same term tungga use a Phallocrypt in the form of two tassels made of Opossum-string, joined by an intermediate portion which suspends the article from the waist-skein; the individual threads of each tassel looped upon themselves, are upwards of a foot long.

Tin-jinna is the Pitta-Pitta name for a sort of miniature kumpara which I have met with only in the Boulia and Upper Georgina Districts where the Yaro-inga folk of Headingly call it pilya; the method of attachment is peculiar in that it is attached to the pubic hair, while on the event of a corrobboree it may be painted white, the only occasion on which an opossum-twine ornament out in these areas is coloured otherwise than red. It is manufactured as follows:—A coil of Opossum-twine is wound round the first two or three fingers of the left hand (fig. 25) and tied on the

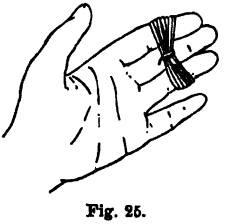

Fig. 25.

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palmar side, the coil thus becoming divided into a number of loops. The proximal loop (*i.e.*, the one nearest the palm) is picked up on the dorsal aspect with a little stick or twig (fig. 25*a*), brought forward, and given a twist (fig. 25*b*). The twist is then continued by rolling between the fore-finger and thumb, and completed by rolling between the right palm and outer thigh; what has thus become a tassel is now held down by the left thumb, while the next proximal loop is made into a tassel, and so on, each tassel being fixed with the thumb, until the star-like article (fig. 25*c*) is completed, and manipulated into shape (fig. 25*d*).

Fig. 25*a*.

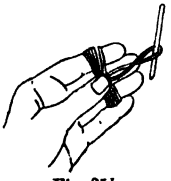

Fig. 25*b*.

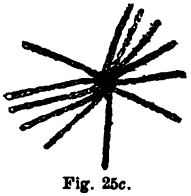

Fig. 25*c*.

Fig. 25*d*.

39. *Digital Amputation.*—All the Kalkadun women of the Leichhardt-Selwyn District, whom I met, though but a few are left, had suffered the loss of the little finger, the left (Pl. viii., fig. 6). A similar condition is reported from the Northern Territory[36], and as the same practice was once in vogue amongst the females in the Rockhampton area, on Fraser Island, at Brisbane[37], and even at Sydney[38], its original area of distribution must have been a comparatively large one. At Fraser Island, [39], it was said to have been done during infancy by the mother, but when the baby cried too much, someone else had to do it, though in one particular case a woman had done it for herself when a girl. The method employed was by binding the finger tightly round and round with a strong cob-web, or when that was not available, hair-twine, thus allowing the top to turn black and mortify, when it was held in an ants' nest and eaten off. The reason assigned for the custom were that they could dig the yams up better with three fingers than with four, and that when fighting it

[36] In certain tribes visited by Mr. H. Basedow the amputation of the right index finger is general (Trans. Roy. Soc. S. Austr., xxxi., 1907, p. 8.)

[37] On the authority of Mr. T. Petrie.

[38] See G. Barrington's "History of New South Wales," where there is an account given of the operation as performed at Government House for the delectation of Governor Phillip. [For an epitome of observations on this subject see Etheridge—Rec. Austr. Mus., V., 5, 1904, p. 273].

[39] From enquiries made through Mrs. Gribble.

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was better to get three fingers hurt instead of four! At Brisbane, this mutilation served to distinguish the coastal from the inland women, was performed by similar agency, usually by the old women, and when the child reached about nine or ten years of age. At Gladstone and Rockhampton, the amputation is said to have been performed at the first initiation ceremony.

40. *Armlets.*—Opossum-twine armlets (PPT. mungkala), in the form of circlets are met with everywhere in the North Western Districts, and in a single length commonly elsewhere. Feather tufts may be stuck in underneath them. In the neighbourhood of Burketown, whence they may have been obtained further westwards, the circlets often have tassels, etc., hanging from them. In the Cloncurry District, armlets are either single, made of one length of twine (MIT. jammal), or multiple, made of three or four (MIT. malyeri) and then practically identical with the chabo fillet[40]. On the Gulf Coast-line between the Mitchell and Staaten Rivers (Gunanni Tribe) an Emu-feather twine armlet (yu-ontabola = name of bird) is made and worn by men only.

The Pandanus-strip armlet (fig. 26, 26*a*) in one form or another is met with throughout the Peninsula, to as low down as the Staaten River on the Gulf-side, and the Bloomfield River on the east coast. In its original form, it is made of a single strip of Pandanus leaf, the ends of which are fixed by splitting, as already described[41]; on occasion however, the trouble of making it properly is considered too much, the ends of the strip being simply tied. In the more northerly areas (*e.g.*, Pennefather River), it may be ornamented after drying at the fire with a glowing charred stick so as to make a zig-zag pattern; worn and made by men only for decorative and corrobboree purposes. Local names:—KYI. (Cape Bedford) monggan, KWA. rau-al, KMI. anjo-ana (the name of the plant), NGG. agantra (also the name of the plant), and GUN. mallé-anga.

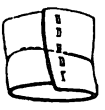

Fig. 26.

Fig. 26*a*.

The Pandanus-plait armlet is made and worn by men on the Embley River, at the Moreton River, and on the higher reaches of the Batavia River. At the last-mentioned, it may be made

[40] At Brisbane, armlets were made from the skin cut vertically down the belly of the Kangaroo—this portion of fur was of a lighter colour; it was worn by men on both arms, at corrobborees and other occasions for full-dress (*T. Petrie*).

[41] Roth—Bull. 1—Sect 8 (e).

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by women, and called a langanjinyi (NGG.), but in that case is fixed around the leg above the calf, and worn by members of their own sex at any time, and also when dancing around the corpse at the burial ceremony. The process of manufacture has already been drawn attention to [42].

On the Tully River are to be seen split Lawyer-cane armlets (MAL. raingkan) made of a single strip double-coiled (fig. 27, 27*a*), and fixed according to two patterns, the construction of which diagrammatically has been described[43].

Fig. 27.

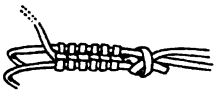

Fig. 27*a*.

From Whitsunday Island in 1901 I obtained a couple of women's bangles from which a few pieces of Nautilus shell hung dependent; the body of the bangle is covered with (?) opossum hair.

41. *Anklets.*—On the Pennefather River fibre-twine with no special name beyond that of the plant from which it has been derived (*e.g. Ficus malaisia*), is tied around the ankles, above the calves, and around the waist; worn by men alone, and only at corrobborees.

42. *Decorative Scars.*—Decorative scars or cheloids can be recognised from all others, *e.g.*, fighting, mourning, etc. not only by their constant position upon the chest (Pl. x., fig. 1) and upper abdomen, often upon the shoulders and either side of the vertebral column (Pl. ix., fig. 2), but from the fact that they are invariably artificially raised, in some cases quite half an inch above the surrounding surface. These raised scars contain pigment, are quite smooth, have rounded edges, and possess the feel on touch of tough fibrous tissue. They are said to remain many years, but eventually decline; what lends colour to this statement is that, as a rule, the scars among the older men are not so strongly elevated as those in the younger people. The patterns followed are linear, dotted, rectangular or circular, the first being by far the most common, but the results of my various enquiries into any pictorial or other signification, except perhaps on the Tully River, has proved fruitless. Whatever the pattern be, it does not anywhere in the north, as far as could be learnt, remain constant for the whole

[42] Roth—Bull. 1—Sect. 11.

[43] Roth—Bull. 1—Sect. 12.

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tribe.[44] nor does it distinguish the different exogamous groups. Amongst the Brisbane Blacks, the pattern did distinguish the tribe (*T. Petrie*). On the Tully River, the more prominent the belly-scars are in a man, the more is he thought of by the women; indeed, in the full development of these particular cicatrices lies the conception of the female's highest ideal of a member of the opposite sex, but women do not care for a boy too soon after he has been cut. Throughout the North Western Districts, on the Bloomfield River, etc., the scarring has nothing whatever to do with the initiation ceremonies, whereas on the Tully River, in the Rockhampton and Brisbane areas it certainly has or had.

43. The place for incision is first of all marked in with charcoal or gypsum, and the cut made with a flaked flint, shell,[45] or quartz, now often replaced by glass; on the Tully River, two incisions are made along the same area, a superficial and a deep one. The account of what follows varies in the different districts, the idea prevalent being apparently to prevent too early union of the edges of the wound, which on the Bloomfield River may sometimes be purposely kept open for a month or two. At Boulia, the natives rub bits of *Portulaca oleracea*, Linn. (the local "Pig-weed") into it for upwards of a quarter of an hour, and say that the nature of the elevation depends upon whether the particular individual has a tight or a loose skin, while the picking at it with the fingers is also subsequently adopted at intervals to make it "jump up." At Glenormiston and at Roxburgh Downs a quantity of bird's or other blood is said to be put on the wound so as to increase the size of the clot, while further up the Georgina River, at Headingley, a boy told me that amongst his own (Yaro-inga) people the wound is rubbed into with charcoal. The Cloncurry Blacks assured me that feather-down is first of all put on to prevent the blood running off, *i.e.*, to cause coagulation, and left there for two or three days until such time as the wound gets "rotten" and the "yellow muck," *i.e.*, pus, runs out; the latter is next removed by rubbing fat into it, and the wound "grows himself then." On the Pennefather River, the scars are briskly rubbed into with the milky sap of *Alyxia spicata*, R.Br. (NGG. wai-peri), and on the Bloomfield with clay, whilst the Tully River

[44] Yet here and there amongst certain of the tribe may be observed distinctive scars which are not met with elsewhere (*e.g.*, circular scar around the umbilicus at Prince Charlotte Bay, square shoulder scar at the Pennefather River), giving rise to the suspicion that originally these decorative cheloids may have distinguished tribe or group.

[45] e.g., *Tellina perna*, Spengler, and *Tellina foliacea*, Linn., on the Pennefather River.

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Blacks use a kind of white mud (MAL. marchila). Nowhere does the process appear to disturb the general health, even when the belly-cuts are made, the native will only admit that he feels a bit stiff for a time.

The dotted elevated scars on the arms I have witnessed being made among the Cloncurry Blacks as follows :—The individual takes a small cold piece of charcoal, half an inch or so in height, and places it on the spot where he intends the dotted scar to be, and then puts a light to the top of it, which, after the preliminary flame is extinguished, goes on glowing until the base is reached, thus letting it burn out to a white ash, with the simultaneous scorching and destruction of the subjacent skin ; in two or three days the papule of cicatricial tissue begins to form. I have tried this method on myself without any raised scar resulting, and I am more and more convinced that independently of anything septic or not being rubbed into the wound, it is more or less natural amongst these natives for the scar to become raised.[46] Similarly, in the case of a half-caste girl in my employ who met with an accidental burn on the wrist and hand, a very elevated scar resulted within the subsequent ten weeks.

44. On the Pennefather River the scars (NGG. gá-ni) are similar in men and women. As a rule, these natives do not make them for themselves ; married men cut them for the single boys, husbands for their wives. Fig. 28, 28*a-d*, represent the more common patterns on the chest and shoulders. On the

Fig. 28.

Fig. 28*a*.

Fig. 28*b*.

Fig. 28*c*.

Fig. 28*d*.

belly, are a series of transverse ones but these are rarely to be seen below the navel; on the back one or two transverse ones are occasionally to be seen across the lines ; again, there is often a short one or two on the thighs.

45. Amongst the Koko-minni of the Middle Palmer River, in front, with both males and females, the usual pattern consists of transverse scars across the lower chest and upper abdomen, vertical ones on the shoulders, and small vertical ones together

[46] Mr. T. Petrie, who saw Davis, the convict ("Darramboi"), when he came in after being fourteen years with the natives, tells me that none of his decorative scars were raised.

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forming horizontal bands around the arms ; on the back, vertical bands of small horizontal cuts on either side of the vertebral column, and occasionally oblique over on the outer buttocks.

46. To the north-west of Princess Charlotte Bay, the few Koko-olkulo whom I have come across, have a very distinctive small circular scar around the umbilicus, in addition to the transverse ones above. Otherwise at Princess Charlotte Bay, the cicatrices are of the ordinary linear type, seen in both sexes, though of far more regular pattern, design, and distinctiveness in the males.

47. Throughout the North-Western Districts, scars are to be seen in both sexes[47]. As a rule they consist of numerous transverse scars cut across the trunk from about the level of the nipples to the navel, and a few, from one to three longitudinal cuts along the top and front aspect of each shoulder ; using the local Pitta-Pitta terms of Boulia, the former marks are spoken of as tipardo, and the latter as muturu. These are the positions most commonly adopted, but additional ones may occasionally be found, as on the upper portions of the chest and on the back. Amongst the Cloncurry Blacks, on the back are five or six pairs of small cuts on either side of the vertebral column from the loins up, and intervening between these may be found two or three pairs of longer bands coming right round the flanks to join those in the front ; again, here and there may be found additional small dots scattered irregularly over the arms and back. In the Yaro-inga Tribe of the Upper Georgina River I have noticed a couple of transverse scars on the upper arms just below the orthodox longitudinal shoulder ones.

48. At Cape Bedford, both sexes are scarred, with varying pattern about which there does not appear to be anything special to be noted. On the Bloomfield River, raised scars are to be seen only on the men ; transverse on the chest, upper abdomen, and back, vertical on the outer thigh and shoulders. A few transverse ones like armlets are sometimes seen on the arms ; exceptionally among the women, there may be armlets formed of small component vertical scars.

49. On the Tully River, the nature and position of the scars varies with the sexes. In the males, one cut is made on the boy horizontally across the lower level of the great pectoral muscles, about a year or two before puberty ; it is an essential cut, made by the father, or other tribesman, is called chindal (MAL.) and

[47] On Mornington Island they are also to be seen on both sexes.

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is believed to assist in making the boy grow. A boy with such a cut is known as a kokai-kokai. The belly-ones (MAL. moingga) are made at the initiation ceremony and are also essential, indeed all males must have both these previously to being married. They are cut somewhat as follows:—About an hour or two before sunset, the bara nut which has been specially prepared by the women is crammed into the novices who, when quite "stodged" so to speak, are forced to drink more and more water, and are not allowed to speak, with the result that the belly becomes grossly distended. The youth lies on his back, with head resting on an old man's lap while the lines along which the cuts are to be made, are marked out with charcoal. One of the elder men will express a wish to operate and he is chosen, or two may be chosen. At any rate, the operator takes a small flint-flake (kwi-an) between his thumb and forefinger and gauges the depth of the proposed incision by the amount of stone projecting. There is a single quick cut for each scar, and while doing so he calls out "ku! ku! ku! etc.," this noise being supposed to prevent the youth hearing the sound of the flint as it cuts through the flesh. There are generally about six of these cuts made; they are allowed to bleed well, and finally yellow mud is rubbed all over the belly. If the scars smart and hurt a good deal, it is significatory that they were not cut at exactly the right time, an hour or two before sunset. If long in healing, it means that a woman saw him during the ceremony without his bark-blanket wrapped round him. Lastly, if the scars do not develop prominently it is indicative that he has been tampering with a woman already; such an individual would be ridiculed and called burlchul, a term meaning any small mark. After the belly-cuts, the lad is no longer known as a kokai-kokai but as a ngu-tcha. Among the optional ones, which may be put on at any time are two or three vertical ones on the outer shoulders and a ring of smaller vertical ones on the arm, these scars, like those on the back are known as kargal (MAL.) and are said to have been introduced here from the Townsville District Blacks. Other optional scars are the half-moon ones (MAL. ngau-o) over the breast, very small horizontal cuts on either side of the median line of the chest as far down as the chindal, and pairs of small horizontal cuts on either side of the vertebral column[48]. In the females, the scars, if any, though they are not essential, are put on only after marriage and then by the husbands; they may be cut on the arms and back with small ones on the buttock, but there are never any on the belly.

[48] For the scars cut on the buttocks of expert climbers, see under Tree-Climbing—Bull. 17—Sect. 8, footnote.

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50. In the Rockhampton area, the various raised scars are said to have been usually imposed at the first initiation ceremony. On the mainland, with both sexes, the ordinary run of these consists of a few long transverse cuts across the lower chest and upper abdomen as far as the umbilicus, with corresponding ones behind, and longitudinal scars down each shoulder. These may be supplemented by bands of small vertical cuts on the arms and numerous small irregular ones on the chest, while, on occasion, the outer sides of the thighs may be scarred. Among the Keppel Islanders I found on males and females, both in front as low down as the umbilicus, and back, numerous small vertical rows of scars composed of short horizontal ones in close apposition; furthermore on the outer thighs of the females a single composite vertical row of horizontal ones, and on the upper arms (also in the males) a few transverse rows of short vertical scars.

51. Amongst the Brisbane Blacks[49], the pattern of the scars was alike for the one tribe, both men and women. Boys and girls when they were about eleven or twelve years of age were operated on by men, and then received their chest- and back-marks (fig. 29, 29*a*), and (the girls only) their shoulder-scars; it was only at their initiation (kippa) that the boys got their shoulder ones. The Moreton Islanders and inland blacks had belly-marks right across as low down as the navel; further north, the belly-scars were cut on either side of the middle line. Each tribe indeed had a different pattern, alike for its male and female members. The incisions were made with a flint or shell, and rubbed in with the fine powdery charcoal obtained from the sapling bark of the Blood-wood (*Eucalyptus corymbosa*, Smith); within a week these scars would be observed raised.

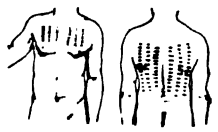

Fig. 29. Fig. 29*a*.

52. *Feathering of the Body.*—Feathering of the body is in vogue throughout all the North-Western Districts, and here and there in the Peninsula, in the Cardwell area, etc., but limited to men only at corrobborees, fighting, or wife-hunting expeditions (Pl. x., fig. 2). In the North-West, white feather-down required for the purpose is obtained from the duck, wild-turkey, etc.; it can be made red when that colour is wanted, by dusting the feathers over with greased red ochre which has been previously pounded on a nardoo or other pounding stone. These two sets of feathers (no

[49] Notes from Mr. T. Petrie.

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yellow ones are made) are put by and retained for subsequent use in respective dilly-bags, koolamons, etc. A sufficient supply of blood, obtained by the ordinary bleeding process[50] from the posterior ulnar vein, is collected into any convenient receptacle. This blood, by means of feathers tied to the end of a stick, is painted over the required pattern, previously deliminated with gypsum, and dab upon dab of feather-down put on—this remaining in position with the coagulation. Sometimes, the whole day may be thus occupied in preparing for the night's festivities, but no women or children are ever allowed to watch the procedure. In the Cardwell area the whole of the individual's head face and body, back and front, except the hands, feet (and sometimes, calves and shins)[51] are covered entirely with white cockatoo feather-down after the parts have been smeared over with the milky juice derived from the *Alstonia scholaris*, R.Br. The more carefully the warrior is thus decorated, the more successful in the fight is he supposed to be.

53. *Painting of the Body.*—It would be practically impossible to give a detailed description of all the different designs adopted in body painting, be it for occasions of rejoicing, sorrow, or fighting, and I accordingly propose only mentioning a few of the more typical patterns ordinarily met with, omitting all mention of the many different ornaments and decorations already detailed which will generally be found accompanying them.

In the North-Western Districts[52], at corrobborees, or other causes of rejoicing, certain transverse and semilunar bands of white paint, or greased yellow and red ochre may be daubed on. On similar occasions, and also at any time, the women throughout the Boulia District may adopt a greased yellow or red tri-linear pattern. This is put on by means of the three first fingers dabbed simultaneously on the paint, and then smeared sinuously but separately along the limbs, both upper and lower, and more or less transversely across the trunk.

On the Pennefather River a flash painting of the males would be somewhat as follows:—Charcoal over the forehead; a white band from either eyebrow down the front of the ear, along the side of the neck, down the shoulder and arm; a dab of red on either cheek; alternate white and red bands across the chest; and one mass of red over the fore-arms, lower extremities and back—this mass of red may be broken up into fine longitudinal lines by scraping with the back of the shell of *Cardium verte-*

[50] Roth—Ethnol. Studies, etc., 1897—Sect. 283.
[51] Roth—Bull. 4—Plates xxix and xxx.
[52] Roth—Ethnol. Studies, etc., 1897—fig. 275, and figs 283-292.

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bratum, Jonas, after the manner of a house-painter's graining-comb.

At Cape Bedford, body-painting is indulged in only by the men. Red, white, and yellow are the colours, mixed with water. which are put on in horizontal rows as far down as the waist, but below that in vertical rows.

On the Bloomfield River, painting varies according to the purposes intended—mourning, fighting, initiation or general corrobborees. For any purpose, the women are only painted in designs on the face.

Amongst the Lower Tully River natives, no particular patterns are followed but a general smear all over with one or other pigment. The body is thus painted not only for decorative purposes but also for comfort; a very cooling effect on a broiling hot day. Hardly any ornaments are worn by the women, and comparatively few by men.

In the Rockhampton District, red ochre was often used for smearing in vertical streaks down the trunk and limbs, while the Keppel Islanders would often paint the trunk and limbs in vertical bands of alternate red and white stripes, both front and back, with the head completely raddled.

54. *Cloaks and Rugs.*—The manufacture of Opossum-cloaks and Kangaroo-rugs is now a lost art in Queensland, and in the course of all my wanderings I have never seen a single specimen. The preparation of the leather however has already been drawn attention to[53].

55. *Plaited-Blankets.*—These were made on the Embley, Pennefather and Batavia Rivers, up to within recent years, so late as 1899; I watched some being made on the Batavia River, where the Nggerikudi folk speak of them as anji-ana-anji. They are of two types, circular and rectangular. The former is manufactured from the whole stems of the *Heleocharis sphacelata*, on a chain-twist pattern[54] from a central core, and working

[53] Roth—Bull. 7—Sect. 12. Mr. T. Petrie says that at Brisbane an Opossum-skin cloak six by four or five feet, sufficiently large for two people to shelter under, would be made up of from thirty to forty skins, cut in squares, and edges over-cast with kangaroo sinew; the holes were pierced with a pointed kangaroo or swan bone, sometimes a porcupine-quill, and the tendon passed through by hand. After the cloak was thoroughly dry, after the sewing, it was scarred over by means of stone or shell into straight-line, cross-hatch, or S-shaped patterns, and then covered with red pigment. The hairy side of the cloak was next to the people lying underneath it. The kangaroo skin, from one animal, was prepared in similar fashion, and laid upon like an under-blanket.

[54] Roth—Bull. 1—Sect. 29.

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round and round until the required size is obtained; sometimes emu-feathers are worked into it. The completed blanket is said to be very warm for sleeping under on cold nights. The rectangular variety is made from split Pandanus leaves also on the chain-twist pattern, but woven from side to side, somewhat after the style followed in the Pandanus colanders[55]. All plaited blankets are manufactured by the women.

56. *Bark Blankets.*—Sheets of soft tea-tree (*Melaleuca*) bark are often to be found used as blankets in cold weather, in many districts, and would appear to answer the purpose admirably. On other occasions the inner bark of various Fig-trees, *e.g.*, the Ribbed-fig (*Ficus pleurocarpa* F.v.M.), *Ficus ehretioides* F.v.M., undergoes special preparation before its conversion into a pliable coverlet. At Atherton, some six or seven years ago, I had the rare good fortune to be an eye-witness of the entire manufacture of such a bark blanket. The individual who made it climbed a *Ficus pleurocarpa* tree (the local kar-pi) to a height of some forty feet and there removed a sheet of bark, the entire circumference of the trunk. The removal was effected by transverse cuts above and below, joined by a vertical one, and pounding along its connecting edge as it was being picked off the tree; in former times, he told me that this pounding was done with a stone. On regaining the ground he uncurled the sheet so removed (fig. 30) which was now very moist on its inner surface, and which measured about forty-two by twenty inches. He next rolled it in its vertical length (fig. 30*a*) with the external layer of the bark outside. Across its width, about four or five inches from the free end, he made an incision with the sharp edge of a broken piece of Candle nut (*Aleurites moluccana*, Willd.) shell; this cut however only went through the thickness of the outer layer, which thus formed a kink (fig. 30*b*), and so enabled him to obtain two free edges to pick up and tear off. The smaller piece of outer bark he had but little difficulty in removing, the larger taking some considerable time; the sketches (fig. 30*c*, *d*) will serve to explain a couple

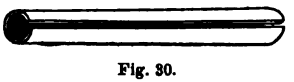

Fig. 30.

Fig. 30*a*.

Fig. 30*b*.

Fig. 30*c*.

Fig. 30*d*.

[55] Roth—Bull. 7.—Sect. 52.

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of the positions assumed in this manipulation, which required no small amount of strength, judgment and skill. The outer layer of bark, not being required, is now cast aside. The next stage in the procedure is to find a suitable tree—suitable in the sense that it has a comparatively large root-branch exposed above the surrounding ground-surface which can be cleared of its bark, and used as a table. Upon this convex table, the oblong sheet of internal bark is placed, and hammered on its inner surface with a piece of wood (fig. 30*e*) shaped like a narrow cricket-bat with handle cut-short, the whole implement measuring about twenty-four by two inches. The blows are inflicted (fig. 30*f*) with the bat's edge struck sharply in a slanting direction at an angle with the run of the fibre, considerable force and rapidity being brought into requisition. During this process the bark-sheet (drawn as it gradually is more and more towards the operator) gets struck in its entirety, simultaneously becoming softer and more pliable, thinner, and correspondingly-increased in surface area. Doubled on its outer side, so as to leave its inner surface again exposed, it is again hammered along the same lines of direction as before, the doubling, pounding, etc., being further twice repeated until what may now be called the blanket is folded into a package, about a foot long, a size just convenient for carrying in a dilly-bag. The sketch (fig. 30*g*) will illustrate the method o doubling which takes place; I draw special attention to this because the other examples only met with in the Cairns and Cardwell Districts are folded on almost identical lines. The blanket is next opened out and exposed to the sun with a view to getting all the moisture out. The particular one under consideration measured on completion four feet by two feet four inches, and took between five and six hours to make. It proved of still further interest in that I had an opportunity of watching the operator

Fig. 30*e*.

Fig. 30*f*.

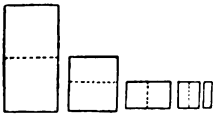

Fig. 30*g*.

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mend an accidental tear (fig. 30*h*). This he did with a piece of fibre-twine and a sharply pointed piece of wood, cut just for the occasion, though it is not to be denied that the mend shewed considerable puckering. Local names:—NGI. wo-nian, CHI. and NGA. kambilla, MAL. magura (=name of the *Ficus ehretioides* from which derived) and keba (=name of tree not identified).

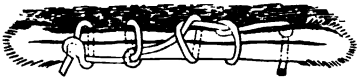

Fig. 30*h*.—The proximal end of the sewing string (on left of figure) is not tied but prevented from slipping by means of a knot in it, suspended by the next loop. The distal end of the sewing string (on the right of the figure) is also prevented from slipping by means of a knot. The sewing was carried out from proximal to distal (left to right of the figure).

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BULLETIN No. 16.

HUTS AND SHELTERS.

(Plates xi.-xvii., and Figs. 31-42.)

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1. Undoubtedly there are certain definite types on which shelters and habitations are constructed, *e.g.*, breakwinds and temporary shelters, bark-covers, huts with a square framework, huts with a dome framework—but of true genealogy or relationship it is difficult to speak with certainty. The break-winds would naturally appear first, though the ridge-pole designs with forked uprights are probably of Papuan introduction; indeed, the latter arrangement is certainly connected with the square framework hut met with only in the Peninsula and in the North, but whether connected in the way of progress or retrogression it is impossible to say[1]. The common arrangement of two more or less bent sticks interlocking at their forks, met with at such widely seporated areas as in the districts around Rockhampton and the whole North-West, coupled with the interlocking of a forked with a purposely-cracked stick at Brisbane, may point to a condition of affairs where the ridge-pole has been done away with, the two forked uprights coming into close apposition, while the simple (single-piece) hoops met with on the Tully River and Coast-line northwards may be an imitation accounted for by the substitution of a pliable material (*e.g. Calamus*, sp.) met with locally in abundance. Any (a) single bent withe or hoop, or (b) two bent withes tied or otherwise interlaced on top, or (c) two forked sloping uprights locked at their forks, will con-

[1] Traces of the forked-upright method of construction were met with in the scaffolding upon which the corpse was laid in the Brisbane area :—See Roth—Bull. 6—Sect. 13, fig. 60.

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stitute an arch supporting the dome roof. Not only is it thus quite possible that the square or dome-like basis of construction of any hut is more intimately connected than might at first sight be supposed but that the different varieties of dome-type also bear intimate relationship as expressed in the following table:—

Huts with a dome framework.

Framework	Arches	Supports	Hut-entrance formed by
A. Multiple, *i.e.*, formed of many arches	(*a*) parallel with one another (Sect. 4).....	.....	one of the arches
	(*b*) cross-wise with one another (Sect 5)	.....	interspace between any two arches
B. Simple, *i.e.* formed of one arch held in position by.. ...	.....	(a) a single support[2]	(i) the whole arch (Sect. 6, 7) (ii) either the arch alone or with the support (Sect. 8) (iii) the whole arch divided by the support (Sect. 9)
		(b) many supports	portion of arch and one of the supports (Sect. 10).

The scooped-out camping grounds of the Wellesley Islanders and the excavated huts of the Boulia District may indicate traces of an under-ground or cave-dwelling population.

In most of the camps there is a special hut for the use of the unmarried men, unmarried adult females always staying with married relatives, never by themselves.

Camps may be shifted on account of death, if there has been a good deal of sickness about, though more generally on account of fleas, vermin, refuse, as well as scarcity in the local food supply.

2. Independently of the protection and shelter provided by natural forms, *e.g.*, overhanging bushes, cave-shelters, etc.,

[2] After the manner of a tripod.

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the most primitive form of artificial break-wind is to be seen in the native camps scattered over the Wellesley Islands. This is composed of bundles of grass (Pl. xi., fig. 1; Pl. xii., fig. 1), cuscuta, leafy switches, or blood-wood boughs with the stems outwards, just thrown on the ground and arranged in such fashion as to form a semicircular hedge up to between eighteen inches and two feet high surrounding the circular excavation in which a couple or more blacks will be lying curled round the central fire. The fact of these natives sleeping without any hut or covering whatsoever may account for their rising with the early dawn, a most unusual circumstance. It was also strange that on the four or five occasions that I examined this group of islands, no evidence was observable of the apparently numerous pits described by Flinders, although it is possible that in the interval between his visit and mine—upwards of a century—the pits have become shallower and shallower until they are now represented by the circular excavations referred to.

Other early types are those where the ground or a tree convenient are utilised. Thus, instead of the bundles of leafy switches being thrown down in a heap one on top of the other, they are now fixed vertically into the soil, and inter-twined with others, and with tussocks of grass maybe, placed cross-wise. Such a break-wind for instance would be observed anywhere and everywhere; in the Boulia District where it is usually from about two and a half to three feet high and known as a walló-a or yangko[3], it is often to be seen on one or both sides of the hut-entrance so as to protect not only the fire itself but also the individuals who may choose to be squatting down in the open around it. Or again, as in the Lower Tully area, a stick or sapling may be tied up at an angle to any convenient tree, and some leafy switches leant up against it. A remaining early type (Pl. xiii., fig. 1) is a sheet of bark fixed lengthways and edgeways into the ground though even this apparently simple arrangement means at least ability to climb a tree, the knowledge of how to remove the bark, and the possession of special tools to effect the purpose.

Amongst more advanced varieties are the winji-winji of the Boulia District, and the ridge-pole shelter of all the more northern area of the Peninsula. Strictly speaking, the former is any temporary bough-shed for protection from rain should it suddenly come up and is built of light sticks grass and bushes. A very common arrangement[4] is to have it attached to the hut

[3] It is called rnyí-i on the Pennefather River.
[4] Roth—Ethnol. Studies, etc., 1897, fig. 248.

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with a view to sheltering the fire which is usually kept burning just outside the entrance. In such a case the two "back-bones" of this kind of winji-winji are built as high as, or higher even than those of the attached habitation and the "legs" instead of being fixed vertically are kept in position more or less horizontally one above the other by being stuck into the vertical interspaces surrounding the original entrance-way; the occupants pass in and out on either side of the fire between it and its shelter-cover.

The ridge-pole would appear to be the most advanced of all, not only in principle, but in the requirement of specialised, *i.e.*, forked, uprights. Such an arrangement may be simple or multiple, in the former case completed with some leafy switches leant up against it (Pl. xiv., fig. 2); in the latter, a couple may be placed side by side (Pl. xv., fig. 2), the overlaid foliage constituting a shelter from the sun when well over-head, or linearly to form a palisade. There may be an extra thatch of tea-tree bark in certain cases.

3. The simplest form of bark-hut met with is that composed of a single sheet either curved or more usually bent at its middle (Pl. xvi., fig. 2), the ends being firmly fixed into the soil.

Fig. 31.

A development of this is where, as on the Pennefather River, two or three such bent sheets overlap one behind the other, the extremities being fairly jambed into the sand which is heaped up against them slightly; it is known locally as rju-ini (fig. 31), the same name given to the oval-framework hut made here and on the Batavia River. On the Jardine River, on the extreme north of the Peninsula I have seen a single-sheet bark hut with one of its otherwise-open ends enclosed with leafy boughs.

4. On the Lower Tully River the following is the orthodox method of building a hut (fig. 32):—

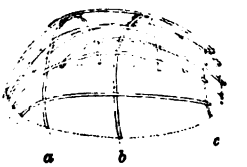

Fig. 32.

Three pairs of unsplit withes *abc* are fixed in position, their ends bent over, and tied on top with lawyer-cane. Three hoops are thus formed, the middle *b* being the tallest, and *c* ultimately forming the entrance, the smallest. Beyond the third arch, some five or six pieces of split cane are stuck into the ground, bent over, and tied (not usually interlaced) on to the arches as to constitute the framework. The next thing is to thatch which is done either

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with grass (Pl. xii., fig. 2), leaf, or bark. The grass employed is the "Blady-grass" (*Imperata arundinacea*, Cyr.) growing from two and a half to three feet long; handsful of it, with the butts down, are laid against this framework all the way round, to be similarly followed by another layer but with the butts up. These two layers of bundles are next fixed in position by means of a split cane which, fixed to one side of the doorway, passes right round the hut, perhaps tied here and there to the frame-work on its course, to be attached to the other side of the entrance. Then, with the butts up, the builder starts again with a single row of thatch, but fixes it with cane as he goes along, round aud round, spiral-wise, until he gets to the top. Finally, at the very top he puts on some tea-tree bark or palm-leaves, a couple of boughs resting on them and so keeping everything in position[5]. The area enclosed by such a hut (MAL. kanna) is of course oval, while the height is usually well under four feet; the ground within is not excavated, nor is the earth shovelled up around on the outside, although this practice has been learnt of late years. The leaf used for thatching is that of the Lawyer-vine (*Calamus* sp.) and Fan-palm (*Licuala muelleri*, Wendl. and Drude) though unfortunately I never enjoyed an opportunity of watching their employment. Where the thatching is of Tea-tree (*Melaleuca*, sp.), it is put on as follows (fig. 33):—A long sheet (*a*) right round the base of the hut, then vertical pieces (*b*) with their ends tucked into the frame-work and overlapping the long sheet, to be followed by several pieces laid horizontally on top (*c*), all kept in position by means of a heavy log or two. Round the base of such a bark-thatched hut, sand is thrown up against it to a height of five or six inches with a view to prevent the bark from springing out. Both men and women build the huts here.

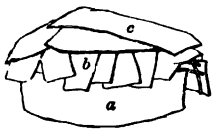

Fig. 33.

5. Alone the Coast-line northwards, *e.g.*, at Cape Grafton, the Bloomfield River, Cape Bedford and around the shores of Princess Charlotte Bay, there is a tendency to construct the circular framework of these huts by firmly sticking the saplings or switches composing it into the ground along the limits of the area to be enclosed (Pl. xvi., fig. 1), and then bending them over

[5] The hut for the special use of the boys during their initiation is similarly grass-thatched, but is a very much larger building, and has no bark or palm-leaves on top.

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and tying, not inter-locking, so as to form a series of hoops crossing one another; these hoops are finally strengthened by transverse and oblique pieces fixed across them, in and out. At Cape Bedford, the hut (KYI. bayen) may be built of five or six such crossed hoops (KYI. karar), at Princess Charlotte Bay of over a dozen, the future entrance (KYI. barkar = mouth) being constituted of one of the intervening spaces; sometimes, there may be two such entrances. The thatch is either of bark, blady-grass, lawyer-vine, cycad- or palm-leaf according to the local vegetation, and certainly both on the Bloomfield River and at Cape Grafton, the leaves are invariably commenced with *from the top*, succeeding layers being placed from above down, heavy boughs or rather logs weigh them into position, the rain being kept out not so much owing to the arrangement of the leaves as to the quantity put on. Furthermore, the leaf-thatch may, as at Cape Grafton, be preceded by odd scraps of bark, placed more or less vertically so as to act as drains for the rain. The height of these huts averages about four or four and a half feet; there is no floor excavation. There is usually a fire burning inside the structure when built for winter-use, and one or two entrances according to the size of hut. Thus, on the Bloomfield River, a man with one wife and a small family will occupy a hut with a single entrance; if he has one old wife, and other wives and children, a larger habitation will be used, the old woman having a separate entrance and separate fire to herself.

6. A similar type of hut[6], made by the Brisbane women, was often seen at Eagle Farm, on the Coast-line, and at Bribie and Moreton Islands. It was much larger than the other made by the men, being about nine feet across and four feet high. It was constructed of a series of four hoops (fig. 34) crossed, stuck at both extremities into the ground, the timber employed being the local wattle or "oak". Filling up the segments, other straight withes were stuck into the ground with their tips tied to the hoops where they crossed each other; there were no sticks fixed in obliquely or transversely, indeed, no interweaving. One of the segments was left open, to act ultimately as an entrance. The whole was then covered with sheets of tea-tree bark, but (unlike the bark-hut made by the men) these were placed transversely and made to overlap after the manner of a shingle roof, with a

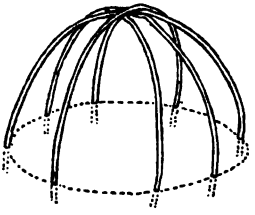

Fig. 34.

[6] According to Mr. T. Petrie.

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large one on top hanging over the "door" which was only just big enough to allow a person to crawl in; heavy sticks were leant up against the bark to keep it in position. These huts were mostly made in winter-time, and would hold eight or nine people; a small fire was kept glowing inside in the centre.

7. In the hinterland of Princess Charlotte Bay, across and in the Peninsula to the opposite Coast-line on the Pennefather River, the dome-framework type of hut shews a formation of door-way similar to that met with on the Tully River, namely in the possession of a special hoop of its own (fig. 35), supported at its apex by another bent withe tied there at right-angles, on to which the remaining scaffolding is attached. For instance, on the Kennedy River, I watched the construction of the "Cabbage-tree" palm-leaf (*Livistona australis*, Mart.) hut represented in Pl. xvii., fig. 2. Gnarwin, the head of the local tribe made it for himself and wives, who are here represented. Withe [1] bent over into a hoop and fixed into the ground at both extremities, forms the door-way; withe [2], placed at right angles to it and tied, has successively attached to it, the remaining withes in the order indicated, all of which are subsequently strengthened by bent sticks interwoven or otherwise attached more or less obliquely. In this particular instance there did not appear to be any definiteness in the arrangement of the axes of the leaves, up, down, or sideways, the whole being prevented blown away by means of heavy timbers fixed firmly into the ground and pressing at an angle against them. Fig. 36 shews a similar method of construction from the Pennefather River. Two long withes [1], [2], twisted around each other for strength and stability are fixed in the ground at either extremity, hoop fashion, and tied low down on each side; this double one constitutes the future hut-entrance which is always turned away from the prevailing wind. Withe [3] is fixed in at its base at a point about midway between the imaginary line joining the bases of [1] and [2]; it is bent down and either by its own spring held under the top of the original hoop, or else jammed into its interstices, or else tied there. Nos. [4], [5], etc., are then attached in similar fashion, usually by their own elasticity, but also interlacing one another may be on top. Sheets of bark (*Melaleuca* sp., *Eucalptus tetradonta*, F.v.M.) are next put on, and held in position by logs as before. The

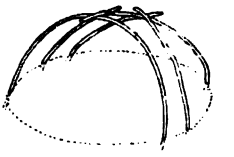

Fig. 35.

Fig. 36.

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Normanton huts, for wet season use, shew a similar basis of construction, and are thatched with grass; the entrance is comparatively small (Pl. xiv., fig. 1).

8. This tripod basis of construction of a dome-frame work hut —represented by the two halves of the hoop and its support in the previous examples—is parallelled in the Rockhampton and Brisbane areas, with the distinction however that the supporting withe divides the comparatively large door-way, which occupies one or both sides of the tripod. Thus at Gladstone, Miriam Vale, etc., I have often observed such an arrangement made of two forked sticks (fig. 37) interlocked with a third support, the bark sheets being loosely attached on whichever aspect required[7].

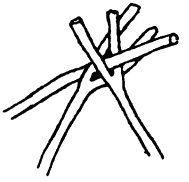

Fig. 37.

9. Again, at Brisbane[8], with the ordinary type of hut made by men, a stiffish withe would be cracked, not broken in two (by bending over the top of the head, and pressing the ends down with the outstretched hands) and stuck at either extremity into the ground, the bent portion being supported by a forked stick similarly stuck into the soil (fig. 38). On the side of the bent cross-piece or hoop, further removed from the fork, were slanted up against it several secondary withes, their bases in the ground limiting the floor-circumference of the hut. Up against the secondary sticks were vertically placed sheets of tea-tree bark, and covering them on top was an extra large sheet after the manner of a ridge-cap (fig. 39). To prevent cold wind passing in between the edges of these sheets, two would be placed side by side and one in front (fig. 40); while, to keep the sheets in position a trench was dug and the earth thrown up against them all the way round. If wind was expected, heavy poles were laid upon the sides and top. The comparatively large "door" or rather opening of such a habitation was always in the direction whence its occupants had come, its position having nothing whatever to do with the prevailing winds; if however the wind proved too strong in

Fig. 38.

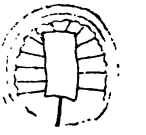

Fig. 39.

Fig. 40.

[7] At Rockhampton such a hut was known as a tu-ra to the local Tarumbal Blacks.

[8] From notes supplied by Mr. T. Petrie. These huts were known as ngunduru after the Melaleuca bark with which they were thatched. Dalu, signifying fire was the name applied to a camp in general; it also signified home in the same sense that we speak of hearth.

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he door-way, a break-wind would always be put up in front, he fire being between it and the entrance. Such a hut was about four feet high. Supposing the blacks were travelling, and a woman had no baby she might be seen carting the bark-sheets for the hut to be erected at the next camping-place, especially if it were known that there was no such bark in its vicinity. On other occasions when travelling and no tea-tree bark was available, they might use "stringy-bark," "iron-bark," or "gum" though not so good; failing these, they would thatch with tussocks of long "blady-grass," beginning from below up, and fixing them in position as before with heavy sticks pressed up against them.

10. Over the larger portion of the North-West Districts another type of dome-frame hut is to be observed; this is the kurau-i of Boulia[9], the yin-bur of Cloncurry, etc., which is originally designed for withstanding rain, but now devoted to indiscriminate use, and is almost always constructed on a piece of high ground, so as to ensure the more rapid dispersal of the water. Building operations are commenced with two naturally-bent forked saplings which are fixed deeply into the ground below—and made to interlock above; to obviate the trouble of finding and cutting suitable lengths of the orthodox forked pattern they may occasionally be seen manufactured with spliced timbers and tied. These two primary supports pass by the name of wandaru (PPT.=back-bone) their lengths varying according to the size of hut required, the summit of which on an average is about four feet and upwards from the ground-level (Pl. xv., fig. 1). Pressing up against them on either side are a number of lighter saplings or prinna (PPT.=legs) fixed firmly into the ground along the area to be enclosed; to allow for the future entrance or tera, the prinna are omitted over the larger portion of the base end of one of the wandaru, the particular "leg" limiting the door-way not being necessarily always larger or in any way specially distinctive from the others. Along the intervals between the prinna, light bushes are laid and intertwined with their foliage down, these being followed by tussets of grass, then a coating of mud, and lastly by another layer of bushes (Pl. xvii. fig. 1), but the covering of mud, which requires no inconsiderable time and skill, is often omitted. The ground-space enclosed by the hut-wall is more or less circular in the smaller varieties, somewhat elliptical in the larger. If the rain beats in at the door-way, the aperture is just covered in with an armful of bushes thrown up in front of it, and if the hut, as in the larger sizes, has two entrances,

[9] Roth—Ethnol. Studies, etc., 1897, figs. 247A and B.

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the rain can be thus easily blocked from either quarter. The level of the ground inside is not purposely lowered, though what with the constant treading upon, it often gives one this appearance. In the Cloncurry District specimens, in addition to the thatch already described, the whole is usually covered with bark-sheets retained in position by means of heavy boughs resting on top. Talking of bark reminds me that so far as the district around Boulia is concerned—and the same holds good for certain other areas—its use as a wall-covering is unusual in the construction of any variety of hut, but whether this is due absolutely to scarcity of timber it is impossible to say, though the advent of the European has been certainly responsible for its substitution by cattle-hides and galvanised iron with an accompanying degeneracy in the framework. The annakadyi is another kind of Boulia District hut built on a similar scaffolding as the kuraui, but designed especially for warmth, and so for use in the winter months. A flat-bottomed hole is dug into the ground to a depth of about one and a half feet, or even more, the rather elliptical outline of its sides forming the limits of the habitation to be erected over it, the bottom of the excavation constituting the future floor. The frame-work of "back-bone" and "legs" is next inserted. Wet grass is then collected and wedged into the spaces intervening between the prinna, and thick layers of mud covered on; the mud thus moistened soon becomes hardened and, by means of the grass, fixed in position; a ring of wet mud about a foot in width is finally smeared round the limits of the entrance for which it forms a sort of artificial door-frame, and at the same time gives it a rather ornamental appearance. On completion, a big fire is kindled within, near the further side, opposite the door, with the result that, by sun-down, when the embers are removed, the place is warm enough to sleep in. The introduction of European clothes and blankets has however been responsible for the gradual and marked disappearance of this particular form of hut. Finding that they can obtain protection from cold by the use of such coverings, the natives are dispensing more and more with these structures which entail no inconsiderable amount of time, toil, and patience in their making; the change itself, owing to these civilising influences, has not been a sudden one, the depth of the floor below the ground-surface having been slowly decreased, while the height of the hut above ground has been correspondingly increased[10].

[10] Mr. J. Craigie, late of Roxburgh Downs, had noticed this gradual modification in height and depth during a stay on the Georgina River of upwards of seventeen years, but the explanation was given me by the Boulia natives.

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11. North of the Palmer River, scattered right through the Peninsula, up to certainly the Embley River on the Gulf Coast, is to be seen a type of hut built on a square framework on the principle of a ridge-pole supported by two upright-forked sticks, very commonly of Pandanus, the dichotomous growth of which lends itself admirably for the purpose. In its simplest form it consists of a single ridge-pole (fig. 41*a*) over which a sheet or sheets of bark are made to rest; in May, 1902, at a spot east of the telegraph line between Moreton and Macdonnell I passed a native encampment made up of a series of these, fixed end on end, like a huge tunnel quite thirty feet long. On the

Fig. 41*a*. Fig. 41*b*.

Middle Palmer, the Koko-minni make use of the bark obtained from one or other of the following timbers:—"Iron-wood" (*Erythrophlæum laboucherii*, F.v.M.), *Melaleuca* sp., "Mess-mate" or "Box-wood." In the next stage the hut will consist of two ridge-poles similarly supporting a bark-sheet (fig. 41*b*). Then comes the condition where short sticks are laid across the ridge-poles to form a bunk upon which an individual may sleep at night, and below which shade may be obtained by day. These

Fig. 42.

sleeping platforms (fig. 42) are common in the hinterland of Princess Charlotte Bay, a sheet or two of bark on the cross-pieces making it more comfortable to lie upon. Pl. xi., fig. 2, represents one from the Lower Normanby River. To the right of the platform in the picture can be seen a "step" also formed of a forked limb pressed against the upright at an angle with the ground, while to the front will be detected the remains of a fire, the smoke from which keeps the sleepers free from mosquitoes; the fire is never built immediately beneath. Such a platform is built from five to six feet high, and may accommo-

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date three or four people on top; local names—KWA. barpur, KLA. arrianggar, KRA. ngamba. To form the fourth stage this sleeping platform is enclosed with two more ridge-poles resting on correspondingly longer forked supports, which, when covered in with bark-sheet, constitute a habitation raised above the surface of the ground. The furthest north at which I have observed such a composite hut was on the Embley River; in the neighbourhood of the junction of the Palmer and Mitchell Rivers (Pl. xiii., fig. 2), Sub-Inspector Garraway tells me the platform is fixed at a height varying from six inches to three feet. On the Embley River the men use the platforms, the women having to be content with the ground, their business being to mind the fire.

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BULLETIN No. 17.

POSTURES AND ABNORMALITIES.

(Pls. xviii.-xxiv.; figs. 43-51.)

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1. *Sleep.*—Judging from my own experience I cannot say that any position assumed during sleep is customary, but from that of others whose opinions are worth considering, it would seem that the habitual posture of sleep is a coiled condition of the body resting upon its side (Pl. xviii., fig. 1), without the head being raised, at Cape Bedford and Cape Grafton, but with the head resting on a hand or arm at the Tully River and Princess Charlotte Bay. On the other hand, I have noticed that in the coiled position, it is the stomach and not the back which is invariably turned towards the fire. The natives are said to habitually sleep on the back with the head low on the Pennefather River, but with one or both hands supporting the head on the Bloomfield River. The Princess Charlotte Bay Blacks are also said to often lie on the stomach, or back, with the head supported by the hands. There is reported to be a very marked habit amongst the Cape Grafton children of swinging their heads and bodies from side to side, while in the sitting position, when lulling themselves to sleep.

2. *Standing.*—Amongst the males there is everywhere a common position assumed in standing at ease, viz., the placing of one foot just above the opposite knee (Pl. xviii., fig. 2), the balance

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of the body being maintained by resting it against a tree, the arm upon a spear, the hand or thigh upon a wommera.

3. *Walking.*—In walking there would appear to be great variations in the degrees to which the feet are turned outwards. The palms are usually held to the side; amongst the Cape Bedford Tribe only two individuals were noticed to hold them to the front. The faster the gait, the greater the swing of the arms, unless of course one hand happens to be carrying the spears. They can all walk their twenty-five to thirty miles a day easily, if required.

4. *Sitting.*—In the neighbourhood of the Pennefather and Batavia Rivers, and elsewhere in the Peninsula, and often observable in the North West, the native, before sitting down, clears a circular space in which to squat. If on sandy soil, he will stand on one foot and brush aside with the other, in a more or less circular movement, any leaves or sticks that may be lying there; if on grass, he will bend down to pluck out the main tussocks. In the bush, in the Pennefather River area certainly, it is the business of the woman to clear this circular space (of grass, leaves, etc.), on which she and her husband will be camping for the night.

Men usually squat with more or less open thighs, and the shins doubled underneath (Pl. xix., figs. 1 and 3); but, as I have noticed both in the extreme west and east of the State, while one shin may be tucked under one thigh, the other may be lying upon the opposite one (Pl. xix., fig. 1). The illustrations shew the more common of the postures assumed by the males in the sitting position. With the women, the thighs are closed, and turned more or less laterally, with the shins tucked underneath, and feet projecting from one side. But ordinarily, so it seems to me, a female will sit with the legs closely apposed, and stretched straight out in front of her. When, however, a woman is in any strange camp, or in her own camp, with strangers present, she often sits with the thighs open, but with the one heel drawn well up into her fork as a screen.

5. *Swimming.*—The Lower Tully River Natives swim in a far more vertical position than do Europeans; furthermore, instead of breasting the water, the right shoulder appears to occupy the most advanced position. The right arm, starting with bent elbow, makes a clean sweep downwards, outwards and backwards until, at the end of the stroke, the elbow is fully extended. The left arm remains sharply bent throughout the

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stroke and limits a far smaller circle, the elbow appearing above the water-surface at each stroke. The legs, not much separated, would seem to work "dog-fashion." If I could liken this manner of swimming to anything of ours, it would be something after the style of the ordinary side-stroke. When swimming any long distances, the Bloomfield River Blacks will go hand-over-hand fashion like a dog; otherwise, the body is tilted laterally, one arm doing the usual side-stroke, the other working pretty close to the body, and moving the fore-arm somewhat vertically. In diving any long distance, and to ensure rapidity of speed, the one arm, instead of doing the ordinary side-stroke will be strongly circumrotated vertically from behind forwards over the head. In all cases, the lower extremities are markedly brought into requisition. On the Pennefather River and at Cape Bedford, either the breast—or side-stroke, according to pace required is brought into requisition. The fact of a whole group of natives, though occupying the lands bordering a river, not being able to swim has already been drawn attention to[1].

6. *Tree-Climbing.*—The various methods adopted in climbing depend in very great measure upon the size, height and slope of the tree. Where the butt is comparatively small and vertical, the native will clutch it with the two feet on the same horizontal level, the knees being kept well out (Pl. xx., fig. 1); thus firmly planted, he drags his body up hand-over-hand fashion, and by a repetition of the movement rapidly advances. This sort of climbing is the chati-balgin of the Mallanpara occupying the Lower Tully River District, the second half of the word signifying the jumping-motion of a wallaby.

In the case of a long dependent vine, the black climbs it hand-over-hand (Pl. xxi., fig. 1), getting a purchase by grasping it between the first and second toes—MAL. parpan.

Where the size and slope of the butt admits, *e.g.*, a cocoa-nut or other palm, the native will just walk up the tree (Pl. xx., fig. 2), throwing the weight of his body backwards, overbalancing being prevented by his clutching the tree firmly with his hands. MAL. balngai-chanin, where balngai signifies "to cross" in the sense of a log laid horizontally, and chanin means "to stand."

7. When the butt is too large, and the first limb not within reach, a very common practice is to place a forked stick at an angle up against the tree (Pl. xxi., fig. 4) and walk up it. At Cape Bedford such a forked sapling is called a walmbar, the same

[1] See Navigation—Ante, p. 2.

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term as is applied to a log thrown across a stream for walking over it. On Mornington Island an interesting development of this method consisted of two such forks placed upon the butt in such a way as not only to interlock but also to support a horizontal piece (fig. 43); this forms a kind of platform upon which the islander can stand securely while cutting out a bees' nest, etc.

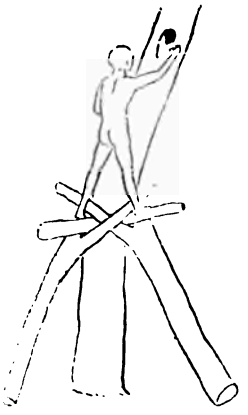

Fig. 43.

8. To ascend a tree with the Calamus "lawyer-cane" climber[2], the following procedures are adopted:—they were all demonstrated to me by a Tully (left-handed) native, an expert in the art, in that he had the moon-shaped cicatrix cut on either buttock, indicative of his special skill in the craft[3]. This pliable cane-climber (MAL. kambai) is specially prepared by greasing with fat, and when not in use is always kept in the shade, and at one extremity is tied into a knot[4].

(a) A more or less straight tree. The right hand holds the cane just in advance of the knot, the cane being then passed round the tree, tightened up with the left hand, and passed in a half-turn from under the wrist to over the elbow-groove and so to under the arm-pit (fig. 45). Slanting himself backwards (Pl. xviii., fig. 3), the native, with elbows a little out, gives a jerk as he raises the cane, simultaneously taking a step up; by repeating the movement, he thus gradually makes progress. The advance is always on the outer curve of the bend of the tree. Thus, supposing the tree is spirally curved, the course of the ascent is in a

Fig. 45.

[2]The local Mallanpara word bumaren is the verb indicating the ascent of a tree by this means.

Fig 44.

A specimen in Dr. Roth's collection from Miriam Vale, where it is known as yu-rol, measures twenty-four feet in length; to the Tarumbal of Rockhampton it was known as a bá-rin or ku-ti.

[3] Here on the Tully River, there is a half-moon cicatrix cut on the buttocks of men who are considered to be expert tree climbers (fig. 44). Such a half-moon scar (MAL. kauren), which may be supplemented with small horizontal cuts, is said to teach the owner how to climb properly.

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spiral, and some boys can thus only climb such a more or less straight tree.

(b) The trunk branches into an acute fork. Should the tree-trunk after attaining a certain height, branch into an acute fork, the native will slack out more and more of the cane over the further limb while he advances correspondingly up the nearer one, until such time as he can step into the intervening wedge whence he can make a fresh start on either of the limbs more convenient.

(c) To free the hand holding the distal extremity of the cane, he accomplishes his purpose by passing the extremity of the cane behind his knee (Pl. xxi., fig. 2), which is very acutely bent, along the shin into the grasp of his first and second toes (fig. 46).

Fig. 46.

(d) To free the hand holding the proximal (knotted) extremity (Pl. xxi., fig. 3). Having completed the previous movement he passes his now free hand under the cane and reaches gradually along until he seizes the knotted extremity; as soon as he has a firm grip, the original one can be released.

(e) To manœuvre an outstanding branch at a considerable height is only what a few expert climbers can do. It is mastered thus:—The hunter will carry up with him, by means of a loop around his fore-head or neck (fig. 47) a sort of "guide-rope," *i.e.*, another length of much lighter cane (but about twice as long as the height of the outstanding branch from the ground) and advance as high up as the limb in question will admit. He then frees one hand, and passes the "guide-rope" over the branch to his friends below (fig. 48); as soon as it reaches them,

Fig. 47.

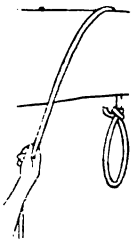

Fig. 48.

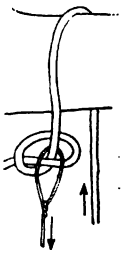

Fig. 49.

he lets go of it. His mates underneath now attach a much heavier cane to this guide-rope, and pull it up again (fig. 49). As soon as this latter one reaches him from over the branch, he

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detaches it (the guide thus falling to the ground), makes a slip-noose (fig. 50) in it with his free hand and teeth, and tightens it with a pull (fig. 51). He next takes a rest for a few minutes, comes down the tree, and when refreshed, reclimbs the hanging cane hand-over-hand fashion with the help of his toes; he is thus enabled to climb on to and over the branch, and then start afresh, if necessary, up the continuation of the trunk.

Fig. 50.

Fig. 51.

This method of climbing a tree with a prepared cane I have seen used along the coast-line from Cape Grafton in the north to as far south as Miriam Vale, *i.e.*, below Gladstone in the south. I have never come across anything like it however in the North-Western Districts.

9. On the Bloomfield River and in the Peninsula, there are modifications of it as follows. Thus, in the former district, when the tree is of comparatively large size and somewhat bent, the black will take some handfuls of a species of "flag-grass," so common here, put tips to roots, make a few twists, and thus form a short rope—he puts this round the butt, catches hold of each extremity, and climbs upon the upper side with successive upward jerks of the arms which are kept in, and the elbows well back[4]. Any such method is nevertheless apparently unknown to the Cape Bedford Natives. In the Peninsula, *e.g.*, at the Coen River and on the Pennefather River trees may be climbed with a bark strip of the "mess-mate" *(Eucalyptus tetradonta)*, "match-box bean" *(Entada scandens)*, etc., held at either extremity without any knot in it, and pressing on the tree-butt with the elbow-tips (Pl. xxii., fig. 1), and so jerking a way up; in the neighbourhood of Mapoon, this procedure is only resorted to in extreme cases, most of the timber being small enough to climb with hands and feet.

10. Tree-climbing by cutting steps alternately right and left is fairly common, met with even out on the Wellesley Islands. It has apparently been introduced on the Tully River of late years[5] although practised at Cardwell only about thirty miles distant; the Tully Natives speak of it as chinda-balgin, chinda signifying any mark or cut, and balgin the jumping motion of a wallaby (Pl. xxii., fig. 2). Though I have used the word "steps"

[4] From Mr. R. Hislop.
[5] On the authority of Mr. E. Brooke.

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these are but knicks, cut usually with one horizontal and one vertical blow by means of a metal tomahawk, just deep enough to afford adequate support for the big toe; where, as on Mornington Island, a celt of some sort has been used, the knicks must evidently have been hacked with many a blow. Though I have seen this method used on the Pennefather River it is somewhat rare there, but of course, as in all cases of tree-climbing, it is only when the butt does not lend itself to the body obtaining a firm foot-hold, that the tomahawk, the cane-climber, and the forked sapling are brought into requisition.

11. *Micturition and Defecation.*—From observations made at Capes Grafton and Bedford, on the Bloomfield and Lower Tully Rivers, at the McDonnell and Moreton Overland Telegraph Stations, and in the North-Western Districts, as to the position assumed by the sexes in micturition, I find that it is customary for the male to squat, except on the Bloomfield River, at the McDonnell and Moreton Stations, and for the female to stand with legs apart except at Cape Bedford and in the North West. On the Bloomfield River, the women may occasionally relieve the bladder in the squatting position. The privates are never handled. In the neighbourhood of Glenormiston[6], outside the hut there has often been noticed a small mound of earth the top of which is scooped out and subsequently beaten down, with the resulting appearance of a volcano in miniature; this receptacle, which is capable of holding quite a quart of fluid, is intended for the women to micturate into. All over the State it is a common practice to wash the hands by urinating over them. A Tully River native to keep himself warm on a cold night, will often urinate over his own legs purposely.

In the Tully River District it is an invariable custom among both sexes, during defecation, to squat with legs apart on a broken bough, stick, or fallen log, always off the ground, on to which they let the droppings fall; both here and on the Bloomfield River a child's excrement is put away in the fork of a tree[7]. Stones, sticks, grass, sand, anything handy in fact, sometimes nothing at all, is used to cleanse the person with after defecation. On the Pennefather River, in the North West, and elsewhere, but certainly not everywhere, a few handfuls of earth are scratched up, and in the excavation so formed, the emunctories after being discharged are covered over with soil.

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[6] According to Mr. J. Coghlan, the late manager there, who is not sure whether this mound is used by the men. Possibly, the receptacle is employed with a view to the preservation of the urine, etc., for subsequent use—see Roth—Bull. 5—Sect. 158.

[7] Roth—Bull. 5—Sect. 80.

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12. *Menstruation*[8].—In the Boulia and Cloncurry Districts, a woman during the menstrual period (PPT. kimba-maro=blood-possessor) keeps strictly to herself out of camp, and will not even walk along the same tracks as the men. On the Tully River she ties a bark blanket round her waist but takes no measures to prevent the discharge soiling her thighs; anything however that is soiled with what comes away from her is planted up in the fork of a tree[9]. She occupies the hut which the husband now vacates for another, though as often as not he will now camp in the open, on the further side of the fire. The males here are said to be frightened at touching women in this condition not only on account of the smell but also for fear of some of the discharge getting on to their persons. On the Bloomfield River she lives in camp under the same roof as her husband, but both here and in other localities where it is not customary for her to betake herself away, a fire separates husband and wife. On the Pennefather River, though remaining in camp, both she and her male partner take every precaution that he neither touches nor steps over anything that passes from her. Everywhere a woman in this condition is unclean and tabu, and may be even more carefully avoided than the mother-in-law; she generally cooks for herself at a separate fire whether living in the camp or out of it.

13. *Pregnancy and Labour.*—During the latter months of pregnancy, a North-West District woman will often rub over her breasts and body some warm powdered ashes with the idea of making the child healthy and strong. All through the period, no restrictions are imposed upon her, but in other districts, her eating certain dietaries will produce various deformities in the child[10]. In the neighbourhood of Cape Bedford the vomiting of pregnancy is certainly known. When the confinement is about to take place, the expectant mother invariably betakes herself to a secluded spot at some distance from the camp, and is attended on by her mother or mother's sister (Princess Charlotte Bay, Musgrove and Morehead Rivers), by her mother-in-law (Pennefather River), by an old woman friend, sometimes by no one at all. Alone, in one district (the Upper Georgina), the husband though not in attendance, may be present at the confinement; very old men are similarly privileged in the Leichhardt-Selwyn area, but never young men or boys.

[8] Roth—Bull. 5—Sects. 89, 90.

[9] Compare the disposal of a child's excrement (Roth—Bull. 5—Sect. 80.)

[10] Roth—Bull. 5—Sect. 95.

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15. The position assumed during labour is far from constant. In the hinterland of Princess Charlotte Bay, the woman will either lie on her back with her head raised, or more generally, bend forwards and support herself on her hands and knees; only if very strong will she take up a sitting position, squatting more or less on her heels. A Bloomfield River Native will assume a kneeling position, her hands and arms supported on a friend's shoulders sitting in front. On the Tully and on the Pennefather Rivers, areas extremely remote, confinement takes place in the squatting position, with thighs well apart, the body resting on the extended arms behind; in the former district, the sufferer may be assisted by a woman-friend either bending over her from behind and pressing, with her hands at the sides, downwards, forwards, and inwards, or at the front with her arms around the patient's loins pressing them towards herself. In the case of the Pennefather woman, she will stay away from camp with her mother-in-law, for three or four weeks. Among the Yaro-inga of the Upper Georgina River, the woman lies on the ground upon her back, with open thighs and drawn-up knees, while the old gin appointed to attend holds her down by the neck and head to prevent her raising herself. The husband, if he be so minded, can take up a position on his wife's left and front whence, a few paces off, he can witness the whole of the proceedings. Amongst the Kalkadun (at Quamby) the patient does not return until about eight or ten days after baby is born. A very old man or two may be present during delivery. Having made a fairly shallow excavation in the sandy soil, she sits over this on her shins and knees, with the thighs well apart; as labour progresses, she either throws her body strongly backwards, as on the Tully and Pennefather Rivers, or forwards so as to rest her hands on the ground, or, if conveniently situated, may grasp some overhanging branch of a tree. In the intervals between the pains a thick cord may be tied pretty firmly round her waist to assist in "pushing the child out," while another old woman will take up mouthfuls of water from a vessel and spit them over the distended abdomen, upon which a sort of massage may also be performed. The genital passages are never touched by anyone, and the baby, without any guidance, is allowed to fall into the shallow depression below.

14. The navel-string, before the mother shifts her position, is next held, close to its attachment to the child, between the flats of both hands of one of the old gins, and briskly rolled backwards and forwards until a very marked twist is visible, when it is cut to a length of about five or six inches. Similarly the after-birth is allowed to fall into the cavity where it is either

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buried, or more generally destroyed by fire. In other districts, the cord is both tied and cut—tied with Opossum-twine (in the North-West), cane-strip (Lower Tully River), and hacked asunder with stone or shell. Its ultimate fate is either to be buried with the after-birth (Tully River), to be destroyed by fire (Bloomfield River), to decorate the infant, to be presented to certain relatives, or to tabu certain articles in the neighbourhood of which it may be placed. Around Princess Charlotte Bay the only area where I find it customary to tie the cord (KRA. bo-ra) in two places, it is forcibly pulled away from the after-birth (KRA. nai-úrra) and fixed around the infant's waist. On the Bloomfield River it is similarly dragged off so as to obtain the greatest continuous length possible, and left for quite twelve days or a fortnight hanging round the baby's neck, or coiled around its neck and arm-pit; if at the end of this time it has not rotted away from off the infant, it is removed and burnt close by. At Cape Bedford, the cord[11] is tied up in a coil and hung on a string round the child's neck, where it is worn for some time, it being finally presented to the father's father if a boy, to the mother's father, if a girl; should either of these old men place it upon a heap of yams, etc., this would be rendered tabu from everybody else except the other grandfathers. In the Upper Georgina area, the navel-string is wound into a ball or roll and forwarded by messenger, at the instance of the father, to his relatives and friends in the neighbouring camps whence presents will now come pouring in. At Cape Grafton the navel-string may be sent round with similar objects in view by tying pieces of it in a waist-circlet. On the Pennefather River the placenta, which is buried at birth, is credited with being connected with the vital principle[12]. Here, when the portion of cord finally falls off baby, it is covered with beeswax, wrapped around with bark, and carried in the mother's dilly-bag; she does not bury it until such time as the little one begins to toddle, because were she to make away with it previously, the infant would surely die.

Confinements are easily got over; I remember in particular the case of a woman who walking from Cooktown to Cape Bedford, a distance of twenty-five miles, was confined the same day, and then started the following morning for Cape Flattery[13].

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[11] The local name for the placenta is bonor, *i.e*, a slug.

[12] Roth—Bull. 5 —Sect. 68.

[13] Amongst the Brisbane natives, immediately the placenta had come away, the mother would go into the water, provided the confinement took place in the day-time; if at night, she would wait until the following morning (*T. Petrie*).

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15. *Notes on Abnormalities.*—Baldness in old people is the exception; out of four hundred and ten natives met with in the neighbourhood of Princess Charlotte Bay, only two old men were thus characterised. Curliness of hair is particularly marked amongst the Tully River Scrub-Blacks as compared with the coastal ones who have it more waved. A more or less wavy condition is prevalent throughout the North Western Districts. The only case of erythrism known to me on the Bloomfield River was that of a little boy; indeed, only three other instances, and these amongst the Tully Natives, were come across during all my travels in Northern Queensland. They were Narro, a lad about eight or nine years, in the local camp on Brooke's Selection, Kachula now (Aug. 1900) on the Johnstone River, as well as his two full-blooded children, a boy and a girl. Red-hair is looked upon by these Mallanpara Blacks as a disgrace, and ridiculed when noticed in Europeans; the local belief is that a person so adorned has a hot temper. In the far North Western Districts, I have noticed a fine growth of hair, over the entire body, including the buttocks, especially amongst the women. A peculiarity of want of pigmentation in the hands and feet (Pl. xxiii., fig. 1) has been seen in two cases from Princess Charlotte Bay. One example of simple hare-lip, was observed in a male on the Embley River, and one single example of goitre (? malignant) in a Kalkadun woman at Cloncurry (Pl. xxiii., fig. 2). Left-handedness is fairly common. In one case at Cape Bedford, where not existent in the parents, the four sons are all left handed. Congenital club-foot is not rare; amongst four hundred and ten natives around Princess Charlotte Bay, there were three cases noticed; one of these was of the left, another of the right, and one of both feet. An allied deformity was seen in two old men in the neighbourhood of Barrow Point, and in Palmer the old chief of the Wakka people at Gladstone. In all three cases the soles could rest perfectly flat as on the gun-case in Pl. xxiv., fig. 1, the malformation evidently residing only in the metatarsus and phalanges. The two old Barrow Point folk were brothers, the younger being deformed only in the left foot, similarly to what both parents are stated to have been. A kind of hammer-toe is very prevalent, more in the females than males, around Cape Grafton and the Mulgrave River District generally. At Cape Grafton the fourth toes of both feet are affected (Pl. xxiv., fig. 2), on the Tully River the third (Pl. xxiv., fig. 3) and fourth (Pl. xxiv., fig. 4), in both areas the peculiarity appearing to run in families. The names of the individuals underlined in the following genealogical trees, indicate those who bear (1902) the deformity:—

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Cape Grafton	(a) Billy Church his wife Nora, Maggie 1st, Maggie 2nd, Alec, Bibby 5 children, Albert
,,	(b) Edie's Husband, Edie Nelly, Rosie, Tommy Namo, Rosie, Toby
,,	(c) Katie ; not in her parents. She has no brothers or sisters.
Mulgrave River	(d) Father, Mother boy, Lucy, Stella
Four-mile Cairns	(e) Father, Mother Martha, Topsy, Maudie
,,	(f) David ; but only on one foot ; neither in brothers, sisters, nor parents.
Saltwater Creek (Cairns)	(g) Annie Bergmann ; both feet, but neither in brothers, sisters, nor parents

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Bulletin No. 18.

SOCIAL and INDIVIDUAL NOMENCLATURE.

(Plates xxv.-xxxi.)

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1. The many variations in the physical characteristics and general contour of the country are not only recognised but expressed, amongst the generic terms thus met with being those indicative of island, sea, beach, mainland, river, swamp, forest, desert plain, precipice, mountain, etc[1]. Each tract of country is specialised by the people traversing, occupying, or hunting over it, and hence, as often happens, may be called by different names. Barrow Point, for instance, is known to the local blacks as E-polin, to the Starcke River ones as Mo-yir, and to the natives of the Normanby and Deighton Rivers as Par-cham-moka. On the other hand, there are certain large tracts to which a single name is applied, but in these cases any reference to them is made by Aboriginals speaking a similar language. The meaning of the actual words so applied to such an area is in many cases lost, whilst in others it is significatory of some local peculiarity. Amongst the former may be mentioned an interesting example from a camping ground in the neighbourhood of Cape Flattery known as Yaborego, from which a present-day

[1] Roth—Bull. 2—Sect. 10.

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family name at Cape Bedford is derived, apparently identical with that of Yaparico given in Captain Cook's narrative[2] as that of an individual with whom the "Endeavour" crew came into personal contact. Amongst the latter, we have similes drawn from shape, soil, vegetable or animal life[3]. Tamal-nobun (=foot-one) is applied to a mountain in the neighbourhood of Cape Bedford which rises sheer vertically from the surrounding plain. Katu (=end, extremity) is Stanage Point, Broadsound, whilst Wollo-in (= iguana's tail) is one of the western spurs in the neighbouring Normanby Range. Dogar (=sand) expresses the country at the base of Mount Saunders, Endeavour River, between it and the sea, and Wargain (=clean sand) the stretch of coast-line between Port Clinton and Shoalwater Bay. Bipu (=any large creek) is the area south of the Fitzroy River between Yaamba and Craignaught. Warra (=wild guava), Butcha (=honey-suckle), Bitchal (=small grub) and Riste (=sand-fly) denote respectively Gracemere, Bayfield, Yaamba, and Raspberry Creek country, and are all indicative of the local phenomena prominently met with (*W. H. Flowers*). The limits of the different tracts of country are of course invariably natural:—a mountain range, desert, plain, forest, scrub, coast-line, or river. Rivers are named after the tracts of country through which they run, any large-sized stream thus bearing dozens of names in its course. The Munbarra Gold-Field was so named after the word Munbar, the mountain range east of the Starcke River, the country on either side of the stream here being Dun-jo, the river itself being accordingly called Piri-dunjo. So again, the McIvor River, at its mouth, is Piri-kulal, at Wallace's Selection Piri-bindi, and at its junction with Cocoa Creek Piri-wundal. The same holds good at Princess Charlotte Bay, where the Koko-warra term for a river is tai-ir, whence a portion of the Lower Normanby River at the crossing is known as Tai-ir-karwin. In some cases, owing to the close proximity of two streams, identical terms are applied; thus the Koko-warra-speaking people call both Marrett River and Birthday Creek Tai-ir-arú-o. A similar practice of naming rivers is found on the Gulf-coast, between the Nassau and Staaten Rivers, and in the far western areas. At every chief encampment, nay, at every recognised camping-ground, there is a name for every landmark, or whatever else can possibly be used as such in the vicinity; each sandhill, water-hole, river-bend, stony ridge, gully, pathway, bigger or peculiarly shaped tree, indeed any-

[2] Hawkesworth's Edition, London, 1773.

[3] Mr. T. Petrie gives several examples in his native place-names.

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thing and everything out of the ordinary has a special name applied to it. At Roxburgh Downs I have seen a fairly sized water-hole, the different edges, etc., of which were described under at least seven different names. Upon the occasion of my once asking a native why every little nook and cranny in the neighbourhood of his camp had a special name, he turned the tables on me by enquiring why all the streets of a township were differently termed:—"Street along town all same bush along my country!" In the far western districts, and other areas comparatively subject to drought, the importance of water both in the neighbourhood of camp and along the different lines of travel will explain in some measure how it happens that, except in the case of some otherwise strongly-marked physical peculiarity, *e.g.*, a mountain, most of the geographical location is indicated by words denoting creeks, rivers, water-holes, lakes or springs. And it thus comes to pass that many a name of a head-station, township, etc., of the white settlers which has been built on a site selected for exactly similar reasons, has its aboriginal equivalent in the name of its adjacent water-hole, etc[4].

2. Any group of natives living more or less permanently together may be specialised according to the tract of country where they have first claim on the native foods; in other words, they may be, and are, spoken of according to the place-name of their main encampment, their "home" so to speak. Thus we have—

At Cooktown, the Kai-ar-ara, *i.e.*, natives occupying the country round Kai-ar (Mt. Cook).

On the Bloomfield River, Yalmba-ara, *i.e.*, natives occupying the country round Yalmba (between Wyalla Station and sea-coast).

At Bowen Bay, Arwur-angkana, *i.e.*, natives occupying the country round Arwur (Bowen Bay).

At Cape Melville, Yalnga-bara, Yalnga (C. Melville).

On the Normanby River, Karwin-inna, *i.e.*, natives occupying the country round Karwin (Lower Normanby).

At Duyphen Point, Taini-kudi, Taini (mangroves).

On the Batavia River, Denya-kudi, Denya (bush-country).

In Broadsound District, Riste-burra, *i.e.*, natives occupying the country round Riste, (country around Raspberry Creek).

This "home," after which the group of natives occupying it happens to be called may or may not be the birth-place of the

[4] Roth—Ethnol. Studies, etc., 1897—Sect. 226.

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occupants, for, according to the district, a child has claims on its father's or on its mother's (Bloomfield) country, and sometimes on neither (Pennefather River)[5]. In many cases, as in the far Western Districts, owing to forced migrations on account of scarcity of water, advancing European settlement and other causes, the place-name of the home has been preserved, but its exact geographical identification lost[6], while on the Wellesley Islands, and here and there in the Peninsula, natives are to be found amongst whom no necessity has apparently arisen for having a collective or specialised name at all.

3. As a general rule, however, within certain limits, each group has more or less friendly, commercial, or other interests with some one or other of its neighbours; its members, though speaking different dialects may render themselves pretty mutually intelligible and possess in common various trade-routes, markets, hunting-grounds, customs, manners and beliefs with the result that they might as a whole be well described as messmates, the one group sometimes speaking of another by a term corresponding with that of friend. There may, or may not (*e.g.*, Boulia District) be one single term applied to such a collection of friendly groups, *i.e.*, a tribe occupying a district, the meaning of the collective name being either unknown (*e.g.*, Kalkadun, Workai-a), or bearing reference to the physical conformation of the country, or else depending apparently upon the nature of the language spoken. So far as physical conformation is concerned, the collective name indicates groups of people occupying forest (*e.g.*, Martchi-tchi of the Bloomfield River), scrub or bush country (*e.g.*, Barti-tchi of the Bloomfield River), low-lying plains (*e.g.*, Ku-inmur-burra of Broadsound District), mountains, coast-line, etc. As far as I have been able to judge, it is these variations of site which have a great deal to do, nay, which I might also say, have given rise to distinctive ethnographical differences; generally speaking, there is always enmity between occupants of the coast-line and inland tribes, between the inhabitants of the plains and the mountain people. The collective name dependent upon the language or dialect spoken by the separate groups may bear reference to peculiarities or differences of speech. In the following examples for instance on the North-east Coastline and its hinterland, this is very striking. Koko-yimi-dir, and Koko-yerla (n)[7]-tchi which has become corrupted into Koko-yellanji, are two words, each in their own dialect,

[5] Roth—Bull. 5—Sect. 68.
[6] As in certain of the groups in the Boulia District.
[7] The *n* is euphonic.

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indicating "speech-similar-with," applied to and by the natives around the Endeavour River, and over Butcher's Hill country respectively. Koko-baldja signifies "speech-abrupt," descriptive of the blacks of the mouth of the Bloomfield River, the Mission Reserve, and Connemara Selection. Koko-piddaji or "speech-poor devil!", a term employed in the sense of pity and compassion, in reference to the Aboriginals who speak it being in their time the weakest and most imposed upon; they used to occupy King's Plain country, the Tableland, and Mount Amos, but are almost extinct now. The Ko-ko-minni or "speech-good people" have their home around the Middle Palmer River. The Koko-warra, *i.e.*, "speech-bad, crooked," etc., in the sense of not being intelligible to others, and so "foreign" is applied by themselves as well as by their more southern neighbours to various mutually-friendly groups of natives wandering over the hinterland south and east of Princess Charlotte Bay, speaking within certain limits similar dialects and practising similar usages and customs; I say certain limits advisedly because although for instance the Kennedy River boys speak very differently from those on the Jack River, they are yet mutually intelligible. It is indeed curious to find a few hundreds of these people collectively speaking of themselves and their mess-mates as Koko-warra without apparently having any idea as to the meaning of the term. Another example is Koko-nego-di, or "speech-there-with," a term applied by the Cape Bedford Blacks to the people (and language) along the coast-line from Barrow Point to Cape Melville. On the other hand, in very many cases, the name of the language has nothing whatever to do with the people speaking it. Indeed, it may be absent altogether, there being no occasion for its use, it may have a now unknown meaning, it may be compounded from the first person pronoun (*e.g.*, the teana-*ngada* and marma-*ngati* dialects of the Mission River, Albatross Bay), and it may be indicated by its place of origin—thus, Yuro-Kappa, Kia-Kappa, and Yilbar-Kappa denote the Bowen, Proserpine, and Charters Towers languages respectively, while Koko-rarmul, and Koko-lama-lama describes what is spoken on portions of the Morehead River and Princess Charlotte Bay. Similarly in the Cairns District, the Kungganji, Yirkanji, and Yidinji speak kunggai, yirkai, and yidi respectively.

4. In the following notes dealing with Ethnographical Districts I propose referring only to those few where, during the past thirteen years I have lived with the natives on terms of fairly personal intimacy, and then but to place on record the

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more important of the separate groups[8] comprising them, the trade-routes followed, and some of the more important place-names The Boulia and neighbouring districts have already been threshed out in a previous work, while the more important of the remaining details of the other areas have been discussed according to their subject matter in my different Bulletins.

5. The Rockhampton and Central Coast-District. My first introduction to the Rockhampton Aboriginals was through "Yorkie," whom I met early in June 1897[9] at Holly Hill where he was taking a contract for clearing timber. He is an aged adult and ex-tracker, and while in the Police Department visited Normanton, Cloncurry, the Upper Leichhardt River, etc., and hence was able to identify the social class-systems of his own group or tribe, the Tarumbal, with those discoverable in the North-Western areas of the State. Like all the remnants of his people, his own wife being a rare exception, he is addicted to the opium-habit. He speaks English very well and is locally known as a curiosity in that he often comes in among the settlers to borrow a sixpence, and invariably repays it! Yorkie travels now between Rockhampton and Gladstone, occasionally going a bit further south towards Miriam Vale. His family, which accompanies him, consists of a wife (Turomi), a son (Mari), a pure-blood son-in-law and daughter with pure-blood grandson about fifteen months old, and a half-caste daughter about nineteen years of age; his own individual name is Tu-wal-wal.

Of the original Rockhampton tribe, the Tarumbal, not many remain now. At the North Rockhampton Camp, the one near the pound-yard, there were about seven or eight adults, of whom three were females, and two or three children. At the other, on the Yaamba Road where Moore's Creek crosses it, I found four males, two females, all aged and a young boy. At South Rockhampton in the Depôt Hill Camp, I came across over a

[8] These groups, etc., have been referred to throughout the various Bulletins by their initial letters bracketed.

[9] The notes on this district were originally written in July, 1898, I having been in continuous correspondence during the twelve months' interval with many of the "old hands" who supplied me with much important information which, at the actual time of my journey, I was unable to obtain. Among such gentlemen, two at least of whom are deceased, I gratefully mention the names of Mr. W. H. Flowers, of Medway, Boganungan (who was on Torilla and Pine Mountain Stations from 1867-91); Mr. W. T. Wyndham, of Boyne Island (the first European occupant of Keppel Island in 1884); Mr. C. E. Roe, of Miriam Vale (thirty years' resident in the district); and Mr. A. Cowie (upwards of twenty years in Rockhampton).

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dozen younger adults of both sexes; these latter occupy their time in collecting ferns, manufacturing "weapons" for the local European market, and selling their women to their white, Chinese, or Kanaka camp-visitors. Among them was a surly looking woman, a Maikulan from the Upper Leichhardt River who had been brought down here by the police, as a tracker's wife, but as usual never sent home again. The present-day real old medicine-man of this Tarumbal Tribe is one "Buckley" who, with a couple of younger women, resides permanently at Balnagowan Station; he has the reputation of knowing everything, all the legends about animals and birds, about death and ghosts, etc., but unfortunately he is too old and decrepid to render himself sufficiently intelligible. I met with some settled remnants of this same tribe again at Mount Morgan, whereas at Emu Park which comprises country certainly belonging to them, I saw none at all, though I was informed that "Old Pluto," a locally-born black is occasionally to be found there. The head-centre or "home" camp of the various groups comprising the Tarumbal tribe used to be in the neighbourhood of the site now occupied by Paterson's slaughter-yard, about one and a quarter miles from Rockhampton in the eastern angle of the triangle formed by the main road, Alligator Creek, and the main drain, this block of country being known as Randol. Large numbers of them have been buried between the yard and the creek and up along it, on the township side, whence, in times gone by, their bones were subsequently removed to hollow trees. In close proximity to this camp used to be their permanent initiation ceremony (Bora) ground, called Kang-kal. They occupied country on both sides of the Fitzroy River which they crossed in canoes. On the northern side of the river they travelled to Broadmount, Balnagowan, and to Emu Park where they would exchange courtesies with the blacks from the northern-coast-line and islands, as well as with those from Yaamba, Mt. Hedlow, etc. South of the river, they would go, for fighting purposes only, along the present Rockhampton-Gladstone road as far as the site of the present "12-Mile Stock-yard," *i.e.*, the water-holes about two and a half miles north of Raglan Post and Telegraph Office. Starting on this route from Rockhampton they passed Archer's Cattle-station at the 15-Mile, the 6-Mile Creek (Ri-umba) close to Cross's Hotel at Bajool, the water-hole (Rular-vúllam), the name of which "Yorkie" says gave the white settlers their present township name of Ulam) at the same hostelry, the 1-Mile Creek (Kindor) beyond the hotel, the stony ridges (Kárani) three miles further on, the succeeding six or seven miles of dense scrub (Kútalmal) until they reached the

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water-holes (Pá-rul) close by the 12-Mile (from Raglan Head-station) Stockyard already referred to; Mount Larcombe they saw in the distance. Raglan country was at one time occupied by Rún-burra and Rúrkavara (groups perhaps of the Urambal) all dead now; together with the blacks from Gladstone, from Miriam Vale, and even (the Yungkono) from Bundaberg they used to meet the Tarumbal in battle here at Parul. Mr. McDonald of Holly Hill tells me that twenty years ago he has seen as many as a couple of hundred natives congregating here just for a fight. Occasionally, the Tarumbal would pay a visit to Gracemere and Westwood, and in very early times were known to have travelled up to Mount Morgan.

6. Gracemere, in the olden days, formed the home of the Warra-burra Group (of the Tarumbal); their peregrinations included Calliungal, Mt. Morgan, Westwood, Rosewood, Rockhampton, Emu Park and Gladstone, than which they never travelled further south; there are no blacks at the station now.

At Mount Morgan, I visited the blacks' camp situate some two and a half miles from the township on the banks of the Dee River. There are a dozen adult natives here of whom eight are women, half of these aged, and several children, the former living in fairly comfortable circumstances with their Chinese and Malay partners. They have their meals at fixed hours, pass an existence far less debased than their sable brethren at Rockhampton, and at the time of my visit had up the clothes' line on which the children's garments, nicely washed and mended, were drying. These blacks are of Rockhampton and Gracemere parentage, the original local Wollea-burra, whose "walk-about" extended out towards the Prairie and Banana way, having all been exterminated.

Rosewood was the home of another Tarumbal Group, the Karun-burra, whose peregrinations included Morinish, Yaamba, Rockhampton, Westwood, and the Dawson River as far as Duaringa. At the present day, when visiting Rockhampton—there are still a few surviving—they camp on the south side in the scrub at the base of the Hospital Hill.

Another of the Tarumbal groups, the Raki-wurra, have their home at Yeppoon, where there are just about a score left. In the old days, they used to visit and be visited by the Keppel Islanders, and would also travel coast-wise to Woodlands, Byfield, Maryvale, up along the Peninsula and back again; at the present time, they occasionally journey to Emu Park and to Rockhampton. Long ago, Yeppoon used to be a meeting place of the Torilla, Rockhampton, Yaamba, and Mt. Hedlow natives.

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In connection with the Mt. Hedlow ones it is of interest to note that the last survivor, "Old Charlie" was buried 30th June 1897, a few weeks before my visit, at a spot about twenty yards from Mr. Bosomworth's on the Greenlake road (*i.e.*, the branch-off from Wyatt's on the main Rockhampton-Yeppon road).

7. At Yaamba (Pl. xxv., fig. 1) is a small camp consisting in the main of old and diseased individuals, of mixed origin, though the Bichalburra Group of the Warrabal Tribe constitute the local one; none of them however could speak or understand English sufficiently well to allow of my collecting a reliable vocabulary. On the Yaamba-Marlborough road in Smith's Paddock at the 4-Mile Creek (*i.e.*, four miles south of Princhester) is a camp of three old males and one aged female, remnants of the Mu-in-burra Group of the Ku-in-murr-burra Tribe. This tribe owned the coast-country comprising Torilla, Banksia, Tilpal, Raspberry Creek and Pine Mountain; Torilla was the main camp or home whence the blacks would travel down the coast to Emu Park, and inland to Yaamba and Rockhampton. At Marlborough I met some Bauwi-wurra natives, some eighteen or twenty of whom are still living. Their chief camp is at Apis Creek, the other side of the range, their "walk-about" including Marlborough, Stoodleigh, Princhester, Leura, Waverley, Willanji, Tooloombah, and Broadsound, *i.e.*, St. Lawrence where they exchange courtesies with the visiting Mackay Blacks, a fact which accounted for my coming across two Mackay-made boomerangs in the Marlborough camp.

8. Turning attention now to the southern portions of this Rockhampton (Pl. xxvi) and Central Coast-District there are the Gladstone and Miriam Vale, as well as the Island Blacks to consider At Gladstone, I visited the native camp situate at Police Creek about three miles from town; it was stocked with fowls, cats, and dogs. The several bark huts were pretty substantially built, giving shelter to twelve or fourteen occupants, mostly old men and women. Some of these blacks work during the day either in the township at house-work, or on the shore at fishing, and together with various odd jobs, manage to get along fairly comfortably; everything however in the way of money is sacrificed for opium. They are of very mixed origin being representatives of Duppil (from Barney Point), Koreng-Koreng (Miriam Vale), Wakka (Gladstone, Calliope), Yungkono (Bundaberg) and other tribes. As a remnant of the Wakka, there was "Palmer" (who long ago was in the employ of Mr. C. Hedley at Boyne Island) a well-known Gladstone identity; he is an old ex-tracker, very

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infirm mentally and physically with narcotics and senility, though managing to crawl into town and out again in spite of a deformity of both feet (double talipes equino-varus). The head-camp of these Wakka, of whom only two or three are said to survive in the district, used to be on the present site of Gladstone whence they would travel southwards as far as Bundaberg, and westwards to a distance which I was unable to locate. In former days the home of the Duppil—of whom only four now remain locally—was situate some three miles south of Gladstone at Barney Point, known as Dolowa, whence the name of the main Gladstone thoroughfare has evidently been applied.

9. At Miriam Vale I came across the comparatively large permanent camp of the Koreng-Koreng with about twenty-five to thirty adults, and the majority of them drunk. They travel northwards as far as Gladstone, southwards to Bundaberg, and westwards out to Cania Station and the diggings. Mr. C. E. Roe has known them travel as far inland as the Bunya Ranges (Rosalie, etc.), but does not think they ever went very far north or south beyond the limits just stated; he has seen a camp with visitors—a total of six or seven hundred—congregated at Miriam Vale and stretching over a length of three miles, though they were perforce to keep shifting owing to the food-supply.

10. Two excursions to the Keppel Islands gave very interesting results. On Big Keppel where the nineteen remnants of the islanders are now congregated, there are sixteen full-bood adults, two half-caste children, and a full-blood six-month old (October 1898) female infant; among the adults only three are males, the overwhelming preponderance of women being easily explicable when the character of some of the previous European visitors to the island is borne in mind. On North Keppel is still to be seen the actual camping ground where at least seven males were shot down one night in cold blood, the father of one of the surviving women (who described to me the scene as it actually took place) being butchered while his little girl was clinging round his neck. Other males were deported and decoyed to the mainland, by false promises of food, etc.; some of them (including Yulowa) succeeding in swimming back the distance of between six and seven miles whilst others were shark-eaten. Mr. Wyndham, the first white occupant of Big Keppel, in 1884, tells me that there were then about fifty-four individuals there; he was just and kind to them. The manner in which he first entered into communication with them is interesting:—in his own words—"At first when I was there the blacks used to keep away from me and the two mainland natives who accompanied

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me, till we managed to surprise and catch eight or more of the tribe that inhabited the south end of the island. Mr. Ross was there at the time but he could not get them to communicate with him; he offered them tea and bread, but they only smelt it and would not taste. Then I told him I would try my hand, and I sat down opposite to them in the same way I had learned and seen years before on the McIntyre River, and smoothed the ground next me with my hand, when "Old Yulowa" who was evidently the head-man, or doctor, of the tribe, got up and sat down by me at once. I then took some sugar and mixed it with water, broke a little bread in it, and let him see me eat it, and he tasted it; he then called out to the other blacks that it was the honey of the *Banksia* (the blossoms of which they used to steep in water and drink), and they all ate. After this, whenever I saw them, they used to come up to me . . . in time, they used to fetch fish." The name of Yulowa was given the boy by Wyndham after that of a bay on the island facing Emu Park; he is an old man now, but has a son, "Paddy," and the little female grandchild left him. Wyndham says that, in his day, Big Keppel was inhabited by two "tribes," the one on the south extremity speaking Tarumbal dialect, the other, on the north, a Broadsound one. A peculiarity amongst them is their rapidity of utterance, a fact of which I had been previously informed by the Rockhampton and Yeppoon natives, the latter on this account speaking of them as "crows."

11. Thanks to the kindness of Mr. W. H. Flowers who supplied me with a copy of a map of the district which he drew up in 1881, it is possible to indicate approximately (Pl. xxvi.) the boundaries of the main tribes, some half dozen or so, which in those days roamed the country. These main tribes were formed of various groups, of greater or less number, named as a rule after some physical peculiarity of that particular spot of country which the individual members regarded as their home. One or two of the main tribes have disappeared in their entirety, though several of the groups, as already mentioned, I was fortunate enough to meet with. In the following list Mr. Flowers has given me a translation of the different group-names; the suffix—burra denotes of, or belonging to. The reference numbers are marked on the Sketch-map in circles.

Ku-in-murr-burra Tribe [Ku-in-murr=a plain]	1. Katu-burra	end, finish
	2. wandu- ,,	mountain
	3. wollo-in- ,,	iguana tail
	4. warru- ,,	"damper" of zamia nut
	5. mu-in- ,,	ashes
	6. pankan- ,,	gap in a range
	7. riste- ,,	sand-fly

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Ningebal Tribe	8. war-gain-	,,	clean sand
	9. randu-	,,	Townshend Island
	10. tarru-	,,	fig that is fly-blown
	11. kuki-	,,	green-headed ant
	12. bu-cha-	,,	*Banksia* tree
Tarumbal Tribe	13. warra-	,,	wild guava
	14. konku-	,,	sickness, retching
	15. barri-	,,	flame caused by fat when cooking
	16. woppa-	,,	island
Warrabal Tribe	17. karun-	,,	flesh
	18. bi-chal-	,,	small grub
	19. bi-pu-	,,	big river
	20. wolle-a-	,,	.....
Tarrambarra Tribe	21 banbara-	,,	open country

The following are some of the Rockhampton District native names collected during my itinerary, exclusive of those which are embodied in the text :—

Apis Creek	kanya-nályana
Archer's Cattle Station at the 15-mile R'ton	wanno-wállim
Balnagowan	ruval-uval
Banksia	tirpara
Broadmount (the hill itself)	baltaran
Calliope	dirralli
Calliungal	nu-rer
Cania	ba
Canoona	wang-in
Duaringa	tarwo-dáninji
Emu Park	wu-pal
Gladstone	kardabai
Gracemere	bá-dul
Keppel Islands :—	
Big Keppel	woppa
North Island	kanómi
Middle Island	ballábba
Myall Island	mammalónbi
Humpy Island	burr-yi burr-yi
Barren Island	arámmi
Corrobboree Mountain	terrimal
Outer Rock	ó-nan
Man and Wife Island	bangka-bulari[10]

[10] lit=rock-two.

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Leura	yawalgárra
Marlborough	wando-wangain
Miriam Vale	ku-rung-gan
Morinish	mundu
Mt. Hedlow	karvara
Mt. Larcombe	paryelli
Mt. Morgan	kunu-wámballi
Pine Mountain	kun-yan
Princhester	má-run
Raspberry Creek	nárbuni
Rockhampton near Alligator Creek	kap-paí-i
Rosewood	malkuru
St. Lawrence	banbara
Tilpal	ká-rumi
Tooloombah	bún-bil
Torilla { Station	wolla
Torilla { neighbouring hill	wandu-borrú
Waverley	kammupalkái-o
Westwood	kápparin
Willangi	kur-gáro
Yaamba	{ yimárpo { yimar-ipo
Yeppoon	í-pun.

12. The Cairns and Atherton District (Pl. xxviii., fig. 1). The sketch-map of the neighbourhood of Cairns (Pl. xxvii.) shews the distribution of the three main tribes as they were in August, 1898, but what with the progress of the mission work at Yarrabah on the further side of False Cape, and the increase of area under settlement on the Cairns side, the arrangement may not possibly hold good at the present day. The following are a few of the native place-nanes :—

False Cape kai-ka	Saltwater Creek· baddabadú
Cape Grafton jilliburri	Palmer Point mun-ju
Murray Prior Range jur-bo	Pyramid Mountain jaro-járo-kan
Fitzroy Island kar-par	Cairns (site) ka-mói
High Island wannaga	Barrier Reef yur-pin.

13. At Atherton, the natives to be met with, as well as in the neighbourhood, belong to three groups or tribes speaking different dialects—the Chirpal-ji, Ngai-kungo-i, and Ngachan-ji who speak chirpal, ngaikungo, and ngachan respectively. The Chirpalji have their main camp in the vicinity of Carrington at Scrubby Creek (Ku-róngul), travelling to Atherton (Kár-kar) and

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the Herberton Ranges (Urang-úndi). The Ngaikungo-i with their home at Atherton go on the "walk-about" to Watsonville (Ilánbare) passing on the way the heads of the Walsh River, country which they speak of as Balkin. The remaining group have their main camp (in 1898) at Putt's Selection, two miles above the Cairns-crossing, on the Upper Barron River (Takkará-il country), whence they wander to the head of the Upper Russell River (Ku-par country). The Tinaroo Ranges are spoken of locally as Mún-gija.

14. The Bloomfield River District[11]. Banna-billa (occasionally corrupted by the local settlers into Banana Billy) is the country at the mouth of the Bloomfield River, the native name designating the selection (Osmundsen's). The group here (Bannabillára) includes some three or four remnants from Bailey's Creek (Gangaji) about four miles south, and perhaps the same number from Tchul-gur, the present Toolgoor Selection of Cochrane's some little distance north of the Bloomfield River. These blacks are the best workers, the most civilised, the best turtle-fishers, and yet the weakest throughout the district, and consequently often made the scape-goats to account for the deaths of any of the more important members of the neighbouring tribes. From their chief home at the mouth they travel along the river as far as the heads (Banna-yirri, *i.e.*, water-falls); southwards, they visit Bailey's Creek. In former times, they used to travel up the northern coast along Cedar Bay to Archer Point, a distance about midway between the Bloomfield and the Endeavour Rivers; but nowadays, they very rarely come north of their river home; they speak Koko-baldja. Wyalla, locally known as Wai-ál-al is regarded as a head-camp; it is the resting-place for natives from Ku-na (Mt. Finlayson, ?Finnegan), from Wú-lu-mu-pan (a tract north of Bauer's Gap), from Wol-pa (the big range lying westwards from Mt. Romeo), and from Yalmba (the district between Wyalla north-eastwards and the sea); they speak Koko-yerla-n-tchi here. The natives met with on the Mission Reserve (Wudjal-wudjal) and at Connemara, *i.e.*, Baird's Selection (Bórru) come from country (Nu-ru) at the head of Granite Creek (the northern branch of the Bloomfield River), from the district (Mu) between Granite Creek and the Bloomfield River, from The Springs, *i.e.*, Cook's Selection (Bul-pan) from west (Mulujin) of Baird's Selection whence they travel to Mareeba (and so get into touch with the Cairns and Atherton District) and from country (Gan-gu) along the eastern branch of

[11] Based upon my first journey undertaken here in March, 1898, and from information kindly put at my disposal by Mr. R. Hislop, of Wyalla.

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the Daintree River; they all speak Koko-baldja like the Bannabillara. Various remnants of what are said to have once been large and powerful tribes now run between Rossville, Helenvale and Mt. Romeo; they comprise Aboriginals from Tandi (King's Lake country and heads of the Middle and East Normanby Rivers), from Chokon (district comprising Mt. Romeo, the Tablelands, Slatey Creek, etc., and perhaps Mt. Amos), and Tau-al-tau-al (country west of King's Lake to the Normanby River). The Wulbur-ara blacks travel from the head of the Mossman River to Byerstown and Maytown; the head-camp of those on the Daintree River would appear to be at Fischer's Selection. I was able to account for two hundred and eighty-seven natives in the whole of this Bloomfield River District.

15. The Cooktown and surrounding district (Pl. xxviii., fig. 2; Pl. xxix., fig. 1). South of the Endeavour River the Koko-yimidir dialect is very corrupt, the natives belonging to this area comprising Mt. Cook, the lower portions of the Annan River, and the coast-country down to Archer Point speaking of it as Koko-ímoji. The "homes" of these people are at Mount Cook (Kai-ar), their actual camping ground at the base of the mountain being called Wain-bur, along the Annan River (Yu-ru country), and in the area (Bul-kon) round about Oakey Creek, a branch of the Annan. They visit Cooktown, known to them all as Kánkar, and often camp at the 3-Mile (Wórra-jagga). North of Cooktown, Cape Bedford is where the natives speak the Koko-yimidir language in its full purity[12]. The Starcke River Natives travel to the McIvor River, to Cape Bedford, and to Cooktown where they camp at the 2-Mile. Among their place-names (these blacks speak Koko-yimidir) on the McIvor are the following—Gorton's Selection, Párra; Thygeson's Kárm-bar; Bramighan's, Nó-kal; Webb's, Winbar-winbar. They speak of Barrow Point as Mo-yir; Look-out Point, Tan-yil; Cape Flattery, Yorro, and the country through which the Morgan and Jeannie Rivers run as Walmbar and Yorl-bun respectively. More or less west of Cooktown is the Boggy Creek Reserve for Aboriginals, a stretch of country (Birbira) on Butchers Hill Station (Yung-kur). These Yung-kurara used in the old days to have a peregrination including the head of the Daintree River, the Bloomfield River, Mt. Windsor (Kalmbar), and sometimes the Laura River and Maytown, at present however (1899) there are some party feuds on, and the travelling is very limited. At Maytown (Wulbur-

[12] Roth—Bull. 2—Sect. 1.

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jurbur) they visit the Wulbur-ara who wander between that township, Laura and Palmerville and speak Koko-minni[13]. They have apparently always been, and still are, at enmity with the Deighton Blacks who speak Koko-warra.

16. In the Princess Charlotte Bay District (Pl. xxv., fig. 2; Pl. xxix., figs. 2, 3), the main original camp or home of the Koko-warra, *i.e.*, where most of their higher initiation ceremonies usually take place is in close vicinity to Balser's Knob. They follow the Normanby and Deighton Rivers as far as the Laura Settlement, they travel up Station and Sandy Creeks to the Morehead River, and westwards they wander over Jeannette's Tableland. In the course of their travels southwards, these Koko-warra come into communication with the Koko-minni from the Middle Palmer River. The Koko-lamalama have their main camp in the vicinity of the mouth of the Bizant River and Jeannette's Tableland; primarily, they are thus coastal blacks, though of late years they have commenced to wander along the tracks of, but not quite to such lengths as, their southern Koko-warra neighbours. In days gone by, the Koko-olkulo had their "home" at the water-holes in the neighbourhood of what is now the Musgrave Native Police Camp. At the present time (1899) they "walk-about" along the higher portions of Saltwater River, and across to the upper reaches of the Hann and Morehead Rivers, while in a northerly direction they wander up to Port Stewart, etc. The Koko-rarmul, the last of the more important of the Princess Charlotte Bay Tribes are somewhat limited in their peregrinations along Saltwater and Morehead Rivers. The following are some of the local place names in the Koko-warra language:—

Balser's Knob lú-imba
Bathurst Head and Flinders' group aríng-u
Barrow Point apóllin
Breeza Station ráu-o
Cape Melville tu-a, yaln-ga, *vel* irán-bai
Jeannette's Tableland gaí-wara
Lakefield Station gó-ra
Musgrave Station pár-jan-ja
Musgrave Station (18-mile camp) arnáu-o
Noble Island mor-kon-den.

Country at back of Bowen Bay ar-wúr
Eastern half of Princess Charlotte Bay coast lamalama
Country to west of Saltwater River ólkulo *vel* wólkulo

While the tracts of country through which the following rivers run are named thus:—

[13] See Middle Palmer River District, Sect. 17.

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Saltwater River ngorpal
Morehead River rar-mul
Hann R. and Station Creek ngum-bu-ar
Koolburra Creek ne-már-o
Bizant River urr-thurr-wa
Jack River te-ra
Normanby River win-járko, kar-win
North Kennedy River nar-nu
South ,, ,, tembu-kúmana
Laura River rár-tal
Deighton River kar-múka
Jeannie River albún, yorl-bun
Starcke River kún-jar, dún-jo

17. The Middle Palmer River District is of interest especially in that the Koko-minni, who occupy it (Pl. xxx.), form the means of communication between natives on the Gulf and East Coasts. These blacks have their main camp, at the head of the King River at a spot known as Irrangga; their country south of the Palmer River they call Churamada, while that which lies north of it is Oninta. They speak of Mt. Daintree as Konongo, Fernhill Mountain as Mo-yeraka, and Strathleven country as Arthau. In 1896 their estimated number was over two hundred. They have a large circle of friends and acquaintances, and visit the Koko-yerlantchi natives on the Laura River, at Maytown which they speak of as Walpom, and Palmerville known to them as Koron. Their fighting expeditions take them westwards down to the junction of the Palmer and Mitchell Rivers, to a locality known as Antalba where they fight the Kau-waranga. When after food they travel *via* Maytown to Limestone—yams being very plentiful on this route—and there come into contact with the Hodgkinson (Union Camp) Blacks, etc. Nowadays, they never go in a southerly direction, having been hunted from Gamboola and Highbury. For purposes of trade they travel northwards to meet the Koko-warra, Koko-rarmul, and Koko-olkulo people. The Kau-waranga follow the course of the Lower Mitchell River as far as its junction with the Palmer River. Two important Gulf tribes with which these Kokominni come into indirect contact are the Gunanni and the Kundara. The Gunanni are coast-blacks running between the Mitchell and Staaten Rivers; they certainly cross the Mitchell and on the south may proceed to the Gilbert River to meet the Kundara whose territory extends down to Normanton, while to the eastwards they do not go further than Dunbar. The main camp of these Gunanni is believed to be in the close proximity of Topsy's Waterhole, not very remote from the New Mitchell River Aboriginal Reserve. The Kundara exercise rights over the coast country between the Nassau and Staaten Rivers. Mentana Station which is in the close neighbourhood of their main camp is called Ngabengamadam.

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18. The Pennefather (Coen) River District[14]—Although this account of the district-blacks was gathered at Mapoon it was given me by Pennefather River (=Coen River on the old maps) Aboriginals, the Nggéri-kudi, who speak Yopo-dimi (yopo=1st. personal pronoun). It would appear that there are probably not half-a-dozen remnants left of the original Mapoon people. The following groups of natives are found in this ethnographical district, the numbers in brackets referring to the sketch map (Pl. xxxi.). The Nggerikudi (2) (Nggeri=sand-bank), whose home is on the north side of the Pennefather River; they are the most numerous of all the coastal people, and the majority of them are now settled at Mapoon. The Gamiti (1) are on the north shore of Port Musgrave, *i.e.*, between the Ducie River and Seven Rivers country. Rá-kudi (3) occupy the south side of the Pennefather River; Taini-kudi (4) (taini=mangrove) the country between Pennefather and Pine Rivers, speaking Anga-dimi (anga=1st. pers. pron.); Denya-kudi (5) (denya=bush) low down on the south side of the Batavia River; and Chong-anji, or Mapoon natives, that portion of Port Musgrave coast-line terminating in Cullen Point. Other groups are the Laini-ngadi (7); O-amro-koro (8) who speak Te-ana-ngada (te-ana=1st. pers. pron.); Cherakundi (9); Gautundi (10); and Winda-Winda (11) who speak Marma-ngati (marma=1st. pers. pron.); the last three groups, perhaps the last four now visit Weipa Mission Station on the Embley River. Amongst the real inland or bush-blacks who naturally do not mix with these coastal ones are the Ducie, Bertiehaugh, and Moreton Tribes, who apparently have no names to specialise themselves by, and possess markedly different vocabularies.

Cullen Point is known as Tratha-m-ballayányana (tratha=a certain fish, the rest of the word signifying sheltering-under-rocks), corrupted into Tullanaringa on the maps. Duyphen Point is called Mo-o-dangana. The country drained by the following rivers is:—

Pennefather River	ringdanúno arú-indi	Mission River	aró-angana
		Embley River	adérama
Pine River	yí-parno		

[14] These notes were originally compiled in 1899 during my first official visit of inspection to the Mapoon and Weipa Mission Stations, to the various cattle runs in the hinterland, and to the Mein, Moreton, and McDonnell offices on the Cape York Overland Telegraph line. I am indebted to the Rev. N. Hey of Mapoon for much of this information.

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19. In every group or tribe there exist certain divisions or relationships of rank and family between its individual members, such relationships also commonly holding good between persons of different groups or tribes. The first of these relationships I propose recording is that upon which the individual's social status depends, and which gives him his titular rank or clima-nym[15]. This rank depends upon his bodily development and in most cases upon his having undergone certain of the initiation ceremonies.

In the Rockhampton District, except perhaps in the area around Miriam Vale, any boy at the first sign of puberty is known as a walpara. As soon as he arrives at the full development of this physiological condition he undergoes the first of the ceremonies, and gradually advances in rank under the following "titles":—

Rockhampton—Ku-rái-i (when the decorative scars are cut); ká-wula (when he has his nose pierced and can marry); mín-dara, and mu-lin (any very old man).

Gladstone—Ká-ra, yanpi, kú-nu-an, kanka-ánkan.

Rosewood—Yeppoon—Ká-wula; katta (adult man).

Miriam Vale—yanbi, inggardo, wúr-balim.

In the case of the females, any very young girl is spoken of as nai-yín-duro (Rockhampton), or ne-kú-rian (Gladstone). At first puberty she is called wálparan (Torilla), kám-bal (Rosewood, Marlborough), or bál-kun (Rockhampton). Having undergone the first ceremony (after which she can marry) at full puberty, she now bears new clima-nyms:—

Rockhampton—tapu-rán.doro, and gradually mu-lin[16] (any very old woman).

Gladstone—wá-kalo, ká-kalal, kú-nu-an[16], kanka-ánkan.

Rosewood—námmuni, kin-kil.

Yeppoon—ár-wuli, dapparo.

On the Tully River, amongst Mallanpara, kokai-kokai is the term applied to a boy from the time he receives the chest-cut or chindal[17] up to the time he eats the eels at the initiation

[15] Roth—Ethnol. Studies, etc., 1897—Sect. 68.

[16] The same name as applied to men in corresponding stage.

[17] Roth—Bull. 15—Sect. 49.

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ceremony when he is known as a ngu-tcha. He is a malari during the time that the belly-cuts are healing, and a chalma onwards, the fully-developed man. A female is a nai-ili when the breasts first begin to protrude, a gatchir at fully developed puberty (corresponding to the chalma stage of the males), a kau-el before bearing a child, and balgari after having borne children.

The progressive titular changes in an individual's life in the Cairns District are here given both in the Yidinji (Y) and Kungganji (K) languages :—

When an infant of either sex walks and gives up suckling it is a ka-wínji (YK), the sexes being distinguished from this time onwards—

Female—kúm-ba (YK) from completion of kawinji stage up to close upon puberty ; yábbnr (YK) at puberty, when she *may* have shoulder-scars inflicted ; and tarkanji (YK) when her first baby appears upon the scene. She then passes gradually into the máitin (K), or tár-anki (Y) stage apparently expressive of the climacteric.

Male—wang-ár-re (YK) from completion of kawinji to puberty ; wúr-kun (YK) at puberty, when he undergoes initiation and receives the transverse cuts (mo-in, moingga, or war-dir) between the navel and breast. He is then spoken of as a manda-kanjánji (YK) when his first child begins to walk about ; nganda (YK) if his children are still all young ; bí-narla when the latter are all old ; and wállō-buri when he is very old, indeed to express the disappearance in great measure of the body-scars.

The Cooktown District clima-nyms, from the lower to the higher grades, are waral, kabir, ngando, and kamba-kamba for the females, with diran, yerka, bama, and dirainggur for the males.

Those for the Princess Charlotte Bay District have already been detailed when dealing with the local initiation ceremonies[18].

Amongst the Kundara, with whom, as I have already mentioned the Koko-minni of the Middle Palmer District come into

[18] Roth—Bull. 12—Sect. 6.

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contact, the following are the titular names applied to the males :—

Bama-ngaman is a boy at early puberty; he attends his first initiation ceremony or yindarang.

Yel-vigvig after full puberty with a little moustache; he attends the second ceremony or yiral.

Pita-mak is after he develops a full beard and moustache, and having undergone the ceremonies, is now allowed to marry.

Mo-kanan as age progresses, and mo-ekwallim when very old, and the cicatrices fade.

In the Pennefather River District the following are applied :— Dai-ingata is a boy at early puberty when he first attends the initiation dances (prumo); pungandrichi at late puberty when the tooth avulsion takes place; trallakuto with a beard and moustache; watapu a very old man. Ji-opadi is a girl at early puberty; morgatana at late puberty; dro-anana after bearing her first child; and dó-apruto after the child-bearing age.

20. With regard to the internal divisions of the group or tribe, depending upon family relationships, I cannot do better than refer the reader, as a preliminary, to a perusal of Chapter iii. of my "Ethnological Studies." I there threshed the subject out fairly thoroughly for that district, with the result that, in spite of the very few alterations and additions since discovered and now incorporated, I propose taking it as a standard for comparison. Gamo-matronyms have been found in the East-coast Districts; in the Rockhampton area[19], except at Gladstone and Miriam Vale, as wittaru and yangaru, corresponding with the Boulia (Pitta-Pitta) utaru and pakuta respectively.

The four paedomatronyms of the North West Districts—the Kupuru, Wungko, Kurkilla, and Banbari—I have been able to trace personally, since 1895, and to identify practically throughout the length and breadth of North Queensland, except in the Peninsula (Pennefather River) about which something further has to be said. The following is a fairly typical list of them[20] :—

[19] I had previously denied its occurrence at Rockhampton—See Ethnol. Studies, etc., 1897—Sect. 62 f.

[20] Only the male form is given, the female is denoted by -n, -an and other suffixes.

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Boulia District...Pitta-Pitta tribe	kupuru	wungko	kurkilla	banbari
Lower Gulf country...Obarindi ,,	pulanyi	yakamari	kangilla	pangarinyi
(1) Nicholson River				
(2) Nassau and Staaten...Kundara tribe Rivers	warkek	yerin	koran	mallori
Across Lower Peninsula...Koko-minni ,,	mangil	parina	ararina	ejurina
(1) Middle Palmer River				
(2) Etheridge River	kubaru	wun-gu	kurkilla	banberi
Georgetown				
Pr. Charl. Bay.. Koko-warra ,,	marmanggal	parinaug	arárurr	yu-yurr
,, ..Koko-olkulo ,,	mangilm	parinaug	ararinang	ejurinang
Cooktown District...Koko-yerlantchi ,, (Butcher's Hill)	maramangili	parina	rarare	yurinang
Tully River...Mallanpara ,,	kara-vanji	chikun	kurkilla	kurongon
Bowen	kupuru	wungko	kurchilla	banberi
St. Lawrence	kuparu	wungko	kurkilla	banbari
Marlborough	mannal	kurtala	kai-yi-rarn	panjur
Torilla, Pine Mtn....Ku-in-mur-burra ,,	mannal	Karlbara	ku-i-alla	kurpal
Rockhampton...Tarumbal ,,	mannal	karalbara	kudala	kurpal
Gladstone.. Wakka ,,	mannal	karalbara	kudala	kurpal
Miriam Vale...Koreng-koreng ,,	balgo-ain	barang	de-ro-ain	banda.

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Amongst tribes occupying the border-country between Queensland and the Northern Territory, are the Yaro-inga to be met with at Headingley and Lake Nash on the Upper Georgina River, and the Workai-a[21] higher up the river at Camooweal, etc. These, in common with other people in the Territory have eight paedomatronyms, (with the one term applicable to both male and female members of each division) traceable into the four of the rest of North Queensland as follows :—

Yaro-inga	Workai-a	
alloguara	pelyarinjo	kupuru
andraja	pleugo	
odalja	woreto	wungko
angalaja	jerameramo	
a-ngella	kangil	kurkilla
anaura	yekamaro	
biltara	pangarinjo	banbari
mo-jo	warko	

The Karawa Tribe, at the head of Settlement Creek in the Gulf Country, to be often met with at, probably their chief camp, Wollogorang Station, about four miles within the Northern Territory border, also have the eight primary divisions, but having separate terms for the male and female members, apparently possess sixteen; so far I have not had sufficiently reliable interpreters to identify them with the Boulia ones.

[21] Throughout the whole of North Queensland, sexual communism, with its specialisation of marriage, is only permissible on the following lines, hence these four divisions have been termed exogamous groups or divisions :—

male	+	female	=	resulting offspring
Kupuru	+	Kurkella	=	Banbari
Wungko	+	Banbari	=	Kurkulli
Kurkilla	+	Kurpuru	=	Wungke
Banbari	+	Wangku	=	Kupuru

the arrangement being graphically illustrated in the table in the "Ethnological Studies"[22].

But if the term "exogamous" division is to be preserved, it must be clearly borne in mind, that the arrangement does not *per se* prevent consanguinity, that it does actually prevent the

[21] These are identical, so one of the authors tells me, with the Waaga of Messrs. Spencer and Gillen.

[22] Roth—Ethnol. Studies, etc., 1897., opp. p. 64—Up till about four years ago I thought that I had obtained from the Annan River District a set of divisions shewing a different line of descent to that met with in Boulia; on further investigation they conform to the usual rule.

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union of couples between whom there cannot possibly be any consanguinity, and that on certain definite occasions over a large area of country it may be ignored[23]. Consanguinity is everywhere prevented by laws of its own ; a man for instance may not marry his mother's brother's daughter, his father's sister's daughter, his daughter's daughter, etc., although they fall within the division out of which it is lawful for him to pick a wife—this is usually the solution of the difficulty which I understand observers have now and again come across in the case of natives unable to live sexually with others apparently belonging to the proper exogamous divisions.

As is well known, each of these exogamous divisions is tabu from either eating, killing, touching, etc., certain animals, and if by totemism pure and simple is to be understood a certain relationship between an individual or group of individuals and an animal or group of animals, then by all means let these divisions be called totemic. In no way, however, can they be deemed totemic in the sense of the totemism described as being met with in the Central Australian Tribes by Messrs. Gillen and Spencer, my views on this matter being recently confirmed for the extreme North Australian Tribes by Professor Klaatsch. More than this, though as already shewn I have traced the identity of the divisions from one end of North Queensland to the other, the animals tabu vary with each particular locality, *i.e.*, there is no constancy between the alleged "totem" and the division. Some typical examples taken at random throughout the country are the following :—

. EASTERN COAST-LINE

	Kupuru	*Wungko*	*Kurkilla*	*Banbari*
Pr. Charlotte Bay				
(1) Koko-olkulo Blacks	various species of poison-snakes	carpet snake; bird like the morpork	goose plover	bird like an owl
(2) Koko-warra Blacks	red kangaroo dingo giant lily brown snake owl	(same prohibitions as Kurkilla)	goose black duck alligator cockatoo blue lily	(same prohibitions as Kupuru)
Bowen (Yuro) Blacks	emu eel turtle	brown snake carpet snake	'rainbow'opossum; ground iguana; frilled lizard	sp. of honey bandicoot eagle hawk stingaree porcupine

[23] Roth—Ethnol. Studies, etc., 1897—Sect. 71, *a*, *b*, *c*.

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ii. Across Country to Lower Gulf & Western Districts

Etheridge River and Georgetown Blacks	red kangaroo alligator (?)	rock wallaby opossum	emu bony bream garfish	rock kangaroo black bream
Upper Flinders River (Wunamurra)	carpet snake emu	.....	eagle hawk black & brown snakes	black duck turkey

iii Lower Gulf of Carpentaria and Western Districts

Between Staaten & Nassau Rivers Kundara Blacks	poison snake owl	two unidentified species of bird	water snake carpet snake	tiger snake brown snake
Cloncurry (Maitakúdi)	iguana whistler duck carpet snake	porcupine emu kangaroo	water snake corella eagle hawk black duck turkey	carpet snake dingo
Leichhardt-Selwyn Ranges (Kalkadun)	emu carpet snake brown snake mountain-snake porcupine wallaby rat opossum mountain-kangaroo	emu mountain-kangaroo wallaby honey porcupine opossum carpet snake brown snake mountain-snake fish, various sp.	pelican whistler duck black duck turkey plain kangaroo fish, various sp.	whistler duck wood duck native-companion rat bandicoot plain-kangaroo carpet snake
Boulia District (Pitta Pitta)	iguana whistler duck black duck blue-fellow-crane yellow dingo small yellow sp. of fish	scrub turkey eagle hawk bandicoot brown snake black dingo white duck	kangaroo carpet snake teal brown-headed white-bellied-duck various sp. diver birds trumpeter fish black bream	emu yellow snake galah parrot sp. of hawk.

22. On the other hand, as I have already shewn[24] it is probable that these (exogamous, for want of a better term) divisions have been originally devised, by a process of natural selection, to regulate the proper distribution of the total quantity of food

[24] Roth—Ethnol. Studies, etc., 1897—Sect. 71 ; Bull 12—Sect. 2.

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available. Examples here and there lend confirmation to this probability. At the mouth of the Batavia River for instance, on the promontary of land to the left of it projecting into Albatross Bay, there are, or rather used to be, before the civilisation of the natives was taken in hand by the Mapoon Missionaries, four exogamous divisions named after separate localities. The Nama-kurgi and Ba-kurgi were named after and owned lands on the river side, the Lar-nganama and Ba-marango on the Gulf side of the promontory in question. The Bakurgi and Bamarango were so named after islets (ba), the Namakurgi after the superabundant local growth of the nama plant (used for thatching huts), while the Lar-nganama got their name applied on account of a special timber, *Acacia rothii*, Bail.—the local lar. These four divisions, which I was unable to identify with the four otherwise common throughout Northern Queensland, could only marry on the following lines :—

male	+	*female*	=	*child*
nama-kurgi		ba-marango		ba-kurgi
bakurgi		lar-nganama		nama-kurgi
lar-nganama		ba-kurgi		ba-marango
ba-marango		nama-kurgi		lar-nganama.

The wife took up her abode at her husband's camp, but the offspring as they grew up became members of and belonged to another camp. I found traces of a similar arrangement in vogue at Murray Island in Torres Strait, and am informed that a similar one is here and there met with in New Guinea. In the Bloomfield River District, the four divisions were all names of bees each being specially associated with different districts. Again, amongst the large Koko-warra Tribe of the Princess Charlotte Bay District is to be met the curious example of identical animals being tabu to two of the exogamous divisions, the Kurkilla and the Kupuru with the result that the limit of food-supply available is exactly balanced. Another trace of the probable origin of these exogamous divisions lies in the fact that in any camping place, all the members of the same division (except of course those who are consanguineous) occupy the one area of the camp. The grouping of certain animals, plants, etc., on the Tully River may (Sect. 24) also prove to be another remnant.

23. According to the particular exogamous division to which an individual belongs, so he bears relationship to other members of the remaining divisions. For as alredy explained[25] every male is primarily someone's brother, father, brother-in-law, or

[25] Roth—Ethnol. Studies, etc., 1897—Sect. 63.

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mother's brother, while every female (virgin or matron) is someone's sister, mother, sister-in-law, or father's sister. These particular relationship names, which, for reasons given, I have called hetero-nyms, vary in the different ethnographical districts. In the Rockhampton District, they are:—

Locality and tribe	Rockhampton Tarumbal	Torilla, Pine M't'n Ku-inmur-burra	Gladstone Wakka	Miriam Vale Koreng-koreng
brother (older)	má-rami	márang	ká-ro	dadtha
,, (younger)	,,	wú-yiru	ku-ni	,,
sister (older)	ná-buru	ná-buru	yá-wunan	wá-dim
,, (younger)	,,	,,	yí-lan	,,
mother's brother	nammo	nammo	bá-bi	mámma
mother	nai-ya	nai-ya	nábba	má-mi
brother-in-law	nú-pa	nu-pa	kínulam	mú-nilam
sister-in-law	gen	kin-kil[26]	ín-won	,,
father	bí-na	bí-na	pí-ya	bá-ba
father's sister	bín-dir	bín-diru	bá-bo	yabbi

In the Princess Charlotte Bay district they are :—

	Kokowarra	*Koko-rarmul*
brother (old)	ár-ma	ár-ma
,, (young)	ar-thúrrta	arrárda
sister (old)	párpa	párka
,, (young)	i-thúrrta	urrlíada
mother's brother	garwúta	arwúta
mother	mang	márka
brother-in-law	ku-dánta	ting-an
sister-in-law	ku-dánta	pan
father	addi	a-wí-aka
father's sister	inní-ra	mí-ada

And so I could go on throughout all the areas of North Queensland over which I have wandered, but such details would only render this work too cumbersome, and are not of sufficient importance for publication, suffice it to know that they exist. For the same reason I am omitting all mention of the geneanyms, and auto-nyms; the former have already been carefully worked out for the Cooktown District[27] where I have had the assistance of local linguists in checking them.

[26] Also means adult woman.

[27] Roth—Bull. 2—Sect. 6.

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24. Divisions of inanimate nature, animals, and plants, have been occasionally met with, but really satisfactory explanations have not been forthcoming. Thus, at Cape Grafton in 1897, independently of the local mission auspices, I came across a local account of a binary division of Kuragulu and Kurabanna (banna=water), that is to say things on land generally distinguished from those on water. The former, indicative of red earth includes everything relating to the land, *e.g.*, red clay, grass, sun, wind, rock, star, fire, and land animals such as kangaroo, bandicoot, black iguana, yellow iguana, emu, and pelican; the latter comprises water, and white or light coloured things and includes mud, cloud, rain, thunder, fresh and salt water, eels, wild duck, shark, alligator, water-snake, and all white timbers.

On the Tully River the respective grouping is more certain. Thus, plants (wherein sex is not recognised) are divisible into four groups, containing special timbers as follows:—

Chalkai-gatcha . Pencil Cedar, Moreton Bay Chestnut.
Chalkai-dir...Contains a particular white-wood, the sap of which is utilised for sticking feather-down on the body.
Chalkai-chamara...Silky Oak.
Chalkai-chiri...Myrtle.

Chalkai is the Mallanpara term for anything big and so old (and thus comes to be also applied to an old person). Grasses and small shrubs are not put into groups or divisions. Indeed, very little appears to be known concerning these groups, they being referred to nowadays only on particular occasions. For instance, in my presence, in 1902, a man on the river-bank was talking to my host, Mr. Brooke, of a canoe passing down the stream which had been manufactured from the bark of a Myrtle-tree that was portion of his real estate; he spoke of the vessel, not by the term kukai (signifying a canoe) but expressed himself by saying, "there goes my chalkai-chiri." These same Tully River Natives do not classify the animals like the plants into groups, but anything extra big, large, etc., anything out of the common, with each kind of animal is spoken of by a different name[28].

[28] I have already recorded this in Bull. 2—Sect. 2—(note).

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EXPLANATION OF PLATE I.

Fig. 1. Logs of light wood used as floats for crossing water.—Mitchell River, &c.

,, 2. Logs tied together forming a simple primitive raft. The man propelling the structure with a pole had attended a prun (Bull. 4—Sect. 15), his head and face being more or less still covered with feather down.—Tully to Russell and Mulgrave Rivers.

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PLATE L.

FIG. 1.—BARK CANOE, GULF COAST.

FIG. 2.—BARK

FIG. 3.—DUG-OUT: SINGLE OUTRIGGER.

FIG. 4.—DUG-OUT:

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CANOE, EAST COAST.

DOUBLE OUTRIGGER.

FIG. 5.—RAFT, WELLESLEY GR

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EXPLANATION OF PLATE II.

Fig. 1. V.-shaped log raft of numerous light saplings, with butts all at one end.—Wellesley Islands.

,, 2. The same form of raft with seat of dried grass, &c.

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EXPLANATION OF PLATE III.

Fig. 1. V.-shaped log raft afloat, showing method of propulsion.—Wellesley Islands.

,, 2. The same ashore, with grass seat and paddle.

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EXPLANATION OF PLATE IV.

Fig. 1. Single-sheet bark canoe with blunt straight ends.—Gulf Coast (Batavia and Ducie Rivers to the Archer River).

,, 2. The same afloat showing capacity for one occupant who kneels resting his buttocks on his heels, and paddling with two oval pieces of bark.

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EXPLANATION OF PLATE V.

Fig. 1. Single-sheet bark canoe with oblique ends, showing method of spreading the sides by means of a stretcher, and means of propulsion.—Gulf Coast (Batavia and Pennefather Rivers).

,, 2. Three-sheet bark canoes.—Whitsunday Island.

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EXPLANATION OF PLATE VI.

Fig. 1. Dug-out with outriggers, and projecting terminal lip or platform for the hunter to stand upon.—Batavia River.

,, 2. Dug-outs showing position of booms and method of attachment to the floats or outriggers.

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EXPLANATION OF PLATE VII.

Fig. 1. Dug-out cut square at either extremity; with one outrigger, capable of carrying five or six people.—Mossman River to Cape Grafton.

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EXPLANATION OF PLATE VIII.

Fig. 1. Man of the Carpentaria Gulf country with beard waxed into two points.

,, 2. Head net worn to prevent the hair thrombs from dangling over into the eyes; manufactured by men only in the Boulia and Selwyn-Leichhardt Districts.

,, 3. Similar net to Fig. 2.

,, 4. Long forehead-net, or miri-miri, worn to keep the hair well back.

,, 6. Digital-amputation.

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EXPLANATION OF PLATE IX.

Fig. 1. Tube ear ornament worn by men on the Pennefather and Embly Rivers, Gulf of Carpentaria.

,, 2. Decorative scars, or cheloids, on a man's back.

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EXPLANATION OF PLATE X.

Fig. 1. Decorative scars, or cheloids, on man's chest and abdomen.

,, 2. Feathering of the body for the Molonga performance of the Boulia Corroboree, and limited to men only ; prevalent throughout the North-western Districts.

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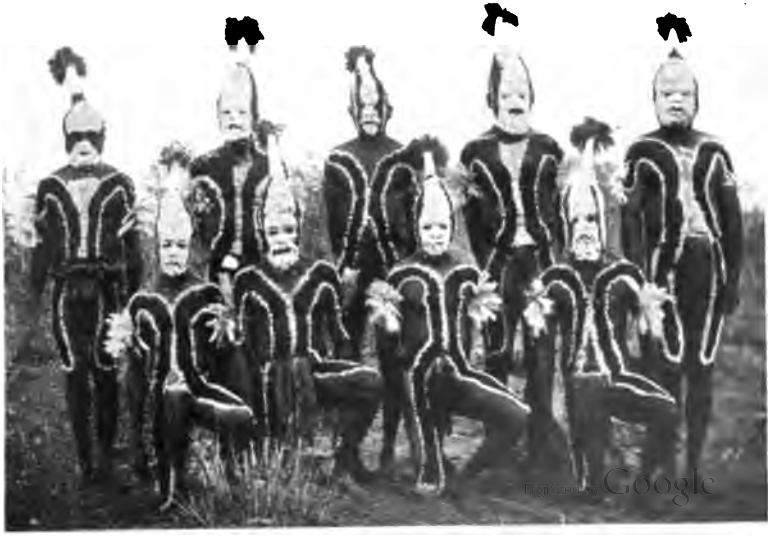

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EXPLANATION OF PLATE XI.

Fig. 1. Most primitive form of artificial break-wind.—Wellesley Islands.
,, 2. Sleeping platform.—Lower Normanby River.

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EXPLANATION OF PLATE XII.

Fig. 1. Another form of primitive break-wind.—Wellesley Islands.

,, 2. Completed hut, thatched with "blady-grass" over a withy frame-work of hoops.—Lower Tully River.

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EXPLANATION OF PLATE XIII.

Fig. 1. An early type of shelter, consisting of a sheet of bark fixed lengthways and edgeways into the ground.

,, 2. Composite huts at the junction of the Palmer and Mitchell Rivers.—Photographed by Inspector Garroway, 1899.

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EXPLANATION OF PLATE XIV.

Fig. 1. Grass-thatched hut, with small entrance. —Normanton.

,, 2. Simple ridge-pole form of structure in skeleton, before leafy switches are leant against it.

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EXPLANATION OF PLATE XV.

Fig. 1. Skeleton of dome-frame hut formed of heavy saplings.—North-west Districts.

,, 2. Another and more advanced form of ridge-pole structure.

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EXPLANATION OF PLATE XVI.

Fig. 1. Circular frame work of switches struck into the ground along the limits of the area to be enclosed.—Northern Coast-line.

,, 2. Simplest form of bark shelter composed of a single sheet bent at its middle, the ends being firmly fixed in the soil.

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EXPLANATION OF PLATE XVII.

Fig. 1. The sapling-framed hut seen in Plate xv., fig. 1, covered with bushes, &c.—North-west Districts.

,, 2. "Cabbage-tree" palm leaf hut.—Kennedy River.

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EXPLANATION OF PLATE XVIII.

Fig. 1. Position assumed in sleep at Capes Bedford and Grafton.

,, 2. Common position assumed in standing at ease.

,, 3. Man climbing a straight tree with the aid of the climbing-cane, and the free end of the cane passed over the elbow.

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EXPLANATION OF PLATE XIX.

Fig. 1. Man squatting with the shins doubled underneath, the right one tucked under the left thigh, the left shin lying on the right thigh.

,, 2. Man squatting on the buttocks.

,, 3. Man squatting; a modification of Fig. 1.

,, 4. Man sitting, the right leg prone and doubled, the left upright and bent.

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EXPLANATION OF PLATE XX.

Fig. 1. Butt of tree clutched with the two feet on the same horizontal level, the knees being kept well out.—Lower Tully River District.

,, 2. Man "walking up," the weight of the body thrown backwards.

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EXPLANATION OF PLATE XXI.

Fig. 1. Man climbing a vine hand-over-hand.

,, 2. Man climbing a tree by means of the climbing-cane, the extremity of the cane passed behind his right knee, which is acutely bent.

,, 3. Another example of climbing by means of the climbing-cane.

,, 4. Forked sapling placed against a tree to be climbed, to aid ascent. —Cape Bedford.

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EXPLANATION OF PLATE XXII.

Fig. 1. Man climbing tree with the aid of a bark strip held at either extremity.—Coen and Pennefather Rivers.

,, 2. Tree climbing by cutting steps right and left alternately.

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EXPLANATION OF PLATE XXIII.

Fig. 1. Partial absence of pigmentation in the hands and feet.—Princess Charlotte Bay.

,, 2. Goitre in a Kalkadun woman.—Cloncurry.

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DESCRIPTION OF PLATE XXIV.

Fig. 1. Deformity allied to congenital club-foot, seen in two old men, brothers, near Barrow Point. In both cases the soles could rest perfectly flat on the gun case below.

,, 2. A kind of hammer-toe seen in a woman at Cape Grafton, the fourth toes of both feet being affected.

,, 3. A similar case at the Tully River in which the third toes are affected.

,, 4. Another instance from the Tully River in which the fourth toes are affected.

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EXPLANATION OF PLATE XXV.

Fig. 1. "Dinah of Yaamba"—An example of a Rockhampton District woman.

,, 2. Examples of the Charlotte Bay District natives—Cape Melville men, 1899.

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EXPLANATION OF PLATE XXV.

Fig. 1. "Dinah of Yaamba"—An example of a Rockhampton District woman.

,, 2. Examples of the Charlotte Bay District natives—Cape Melville men, 1899.

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EXPLANATION OF PLATE XXVI.

Sketch map of the Rockhampton and surrounding Coast District, showing the main tribal boundaries. The numbers in circles refer to the component groups of the different tribes.

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EXPLANATION OF PLATE XXVII.

Sketch map of Cairns and surrounding district, showing the locations of the various tribes.

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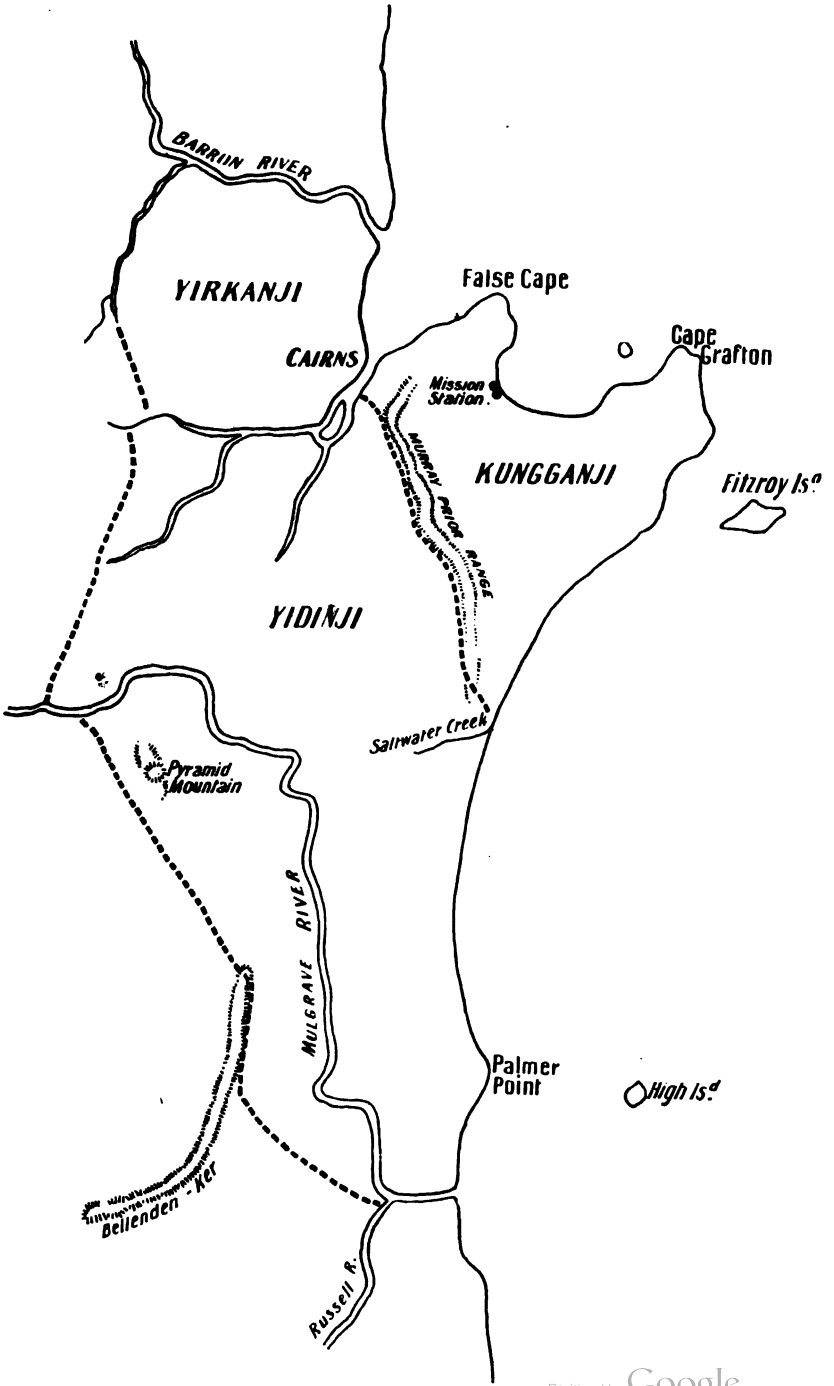

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EXPLANATION OF PLATE XXVIII.

Fig. 1. Examples of Cairns District natives (men).—Photograph by Messrs. Handly and Cross, Cairns.

,, 2. Examples of the Cooktown District natives (women).

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EXPLANATION OF PLATE XXIX.

Fig. 1. Examples of Cooktown District natives (men).

,, 2. Examples of the Charlotte Bay District natives—Cape Melville women, 1899.

,, 3. Mainlander abreast of Cairncross Island. —Photographed by Capt. G. Pym.

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EXPLANATION OF PLATE XXX.

Sketch map showing the location of the Koko-minni and their relation to other tribes.

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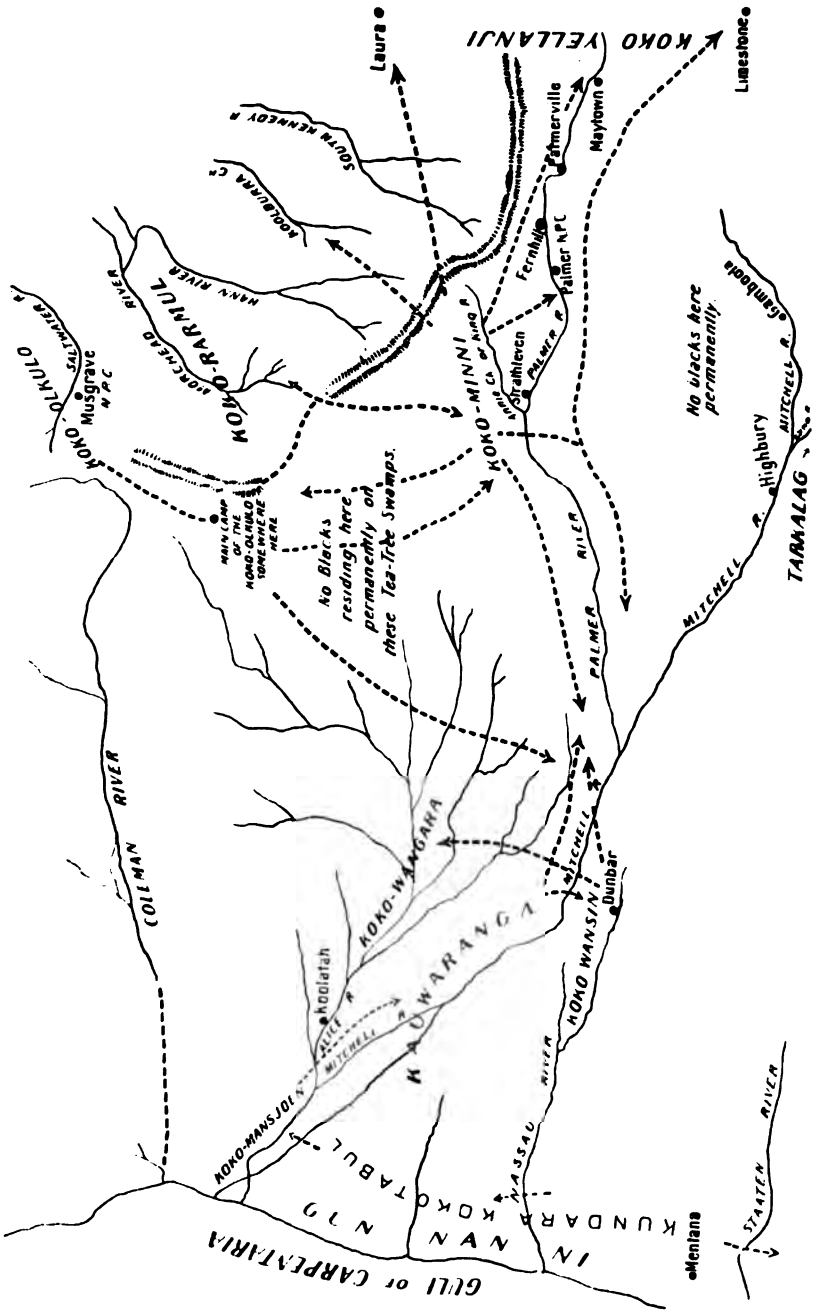

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EXPLANATION OF PLATE XXXI.

Sketch map to illustrate the territorial divisions of the tribes in the Pennefather (Coen) River District.

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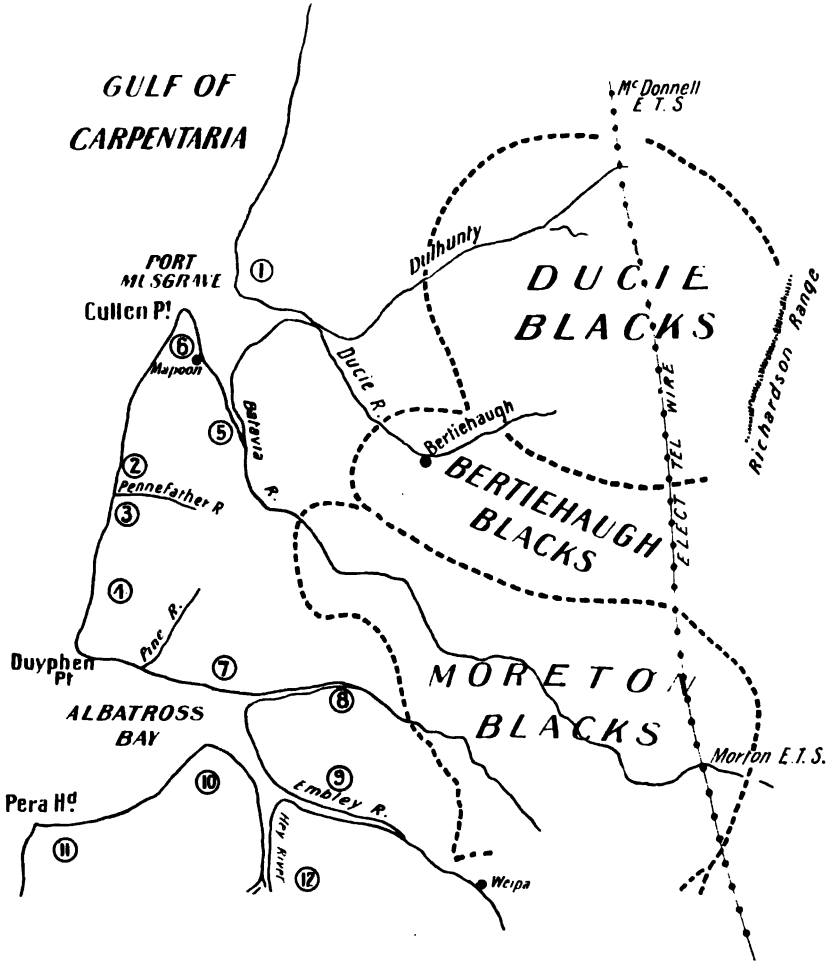

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STUDIES IN SEMITIC KINSHIP

By Brenda Z. Seligman

I. THE RELATIONSHIP SYSTEM

Introduction.

1. The Problem stated.
2. Relationship System of the Beni Amer.
3. The formation of the plural of the word for "father" in Hebrew.
4. The Semitic Terms of Relationship, with table.
5. Examination of the terms used in Arabic for father-in-law, with special reference to the sociological aspect of the change in the meaning of these terms.
6. Conclusion.

THE material upon which this paper is based is in the first instance taken from the Relationship systems and customs of a Sudan Arab tribe (the Kababish[1]) and of the Beni Amer, a Hamitic tribe whom I have been able to study myself in the Sudan by means of the genealogical method. Miss Moss kindly collected a list of relationship terms in Malta for me, which I have used. The rest of the material has been taken from dictionaries, and although I am fully aware of the inadequacy of material culled from dictionaries, yet in this case the method is inevitable. Full investigation into the relationship system and social organizations of the Amharic-speaking Abyssinians would be of the greatest value, and a complete examination of the Maltese terms would also be of interest. I have had much help from friends, though they are in no case responsible for my conclusions. Chief among these is Professor S. Langdon, who has given me much information. I am also indebted to Dr. Hall, Professor Zammit, Dr. Czermak, and Mr. S. H. Ray for references.

I. The Problem

The use of the classificatory system of relationship by the Beni Amer, a people speaking a Semitic language, led me to examine the terms of relationship in Semitic languages generally. This examination indicated that the Arabic and Hebrew systems are based on a classificatory system and not upon a family system.[2] Besides demon-

[1] "The Kababish: A Sudan Arab tribe": *Harvard African Studies. Varia Africana*, vol. ii, 1918.

[2] "The classificatory system groups together various relationships which we distinguish, while others which we group together are separated. The simplest way to understand its essential characters is to recognize that the classificatory

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strating this, I hope to show how deeply sociological factors may influence language. This is an idea which seems so obvious to the anthropologist that it should need no apology. It is, however, frequently overlooked by philologists, with the result that in constructing rules in grammar cause and effect are confused.

II. Relationship System of the Beni Amer

As already stated, the classificatory system is based upon the principle that kinship terms are used towards members of the clan or smaller group, not as we are accustomed to use them, towards members of the family only. Thus, in a simple classificatory system in which descent is reckoned in the male line, every brother of the father will be called " father ", and their wives " mother ", and all their children " brothers " and " sisters ". In a system in which descent is reckoned in the female line, while the sons of the father's brother may not even be considered as relations, the children of the mother's sister are treated as own brother and sister.

The Beni Amer inhabiting the plains of the Red Sea Coast in the Sudan are a Hamitic people who speak a Semitic language—Tigré. Tigré is the modern representative of Geez or Ethiopic, the liturgical language of Abyssinia, which is itself said to show closer affinities to Sabæan (with inscriptions that date back to at least the ninth century B.C.) than it does to Arabic or Hebrew. Thus, Tigré, though a living language, may be looked upon as containing elements that are older than either Arabic or Hebrew.

It is not relevant here to examine all the evidence that points to the fact, that, though the Beni Amer now reckon descent in the male line, they were formerly matrilineal; nor need I go into all the details of their relationship system, which I hope to deal with elsewhere. The terms in use in their system will be seen in the comparative table, and

system is founded on the clan or other similar social group, while our system is founded on the family. All members of the speaker's clan who are of the same generation as himself stand to him in the same relation as his own brothers and sisters; all members of his father's clan of the preceding generation stand in the same relation to himself as the father or the father's sister; all of the generation before receive the same designation as his grandfather. Similarly, all those of the mother's clan and of her generation are classed with the mother and the mother's brother; all those of a wife's clan and of her generation stand in the same relation as her actual brothers and sisters, while all of the preceding generation are classed with her parents. This application of terms of relationship to wide groups of relatives may persist after the clan-organization has disappeared, and the exact way in which the terms are applied varies greatly with the nature of the social organization, so that the system often preserves evidence of social conditions which are no longer present." —*Notes and Queries on Anthropology*, 1912, pp. 149, 150.

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here I need only point out the outstanding features. The Beni Amer have no word for father's brother, but address him as *yiba*, "my father."[1] The children of the father's brother and all men whom he calls "brother", using this term in its classificatory sense, are called "brother" and "sister". But it must be noted that the Beni Amer have adopted the usual Arab marriage with the father's brother's daughter, and after this has taken place a man will no longer call his wife's brother "brother", but will use the term for brother-in-law.

It will be seen in the table that although no word for father's brother is found in Tigré, the father's sister is *amaitye*. As the father's sister's husband is called *bis amaitye* (spouse of the *amaitye*), I suspected that *amaitye* was not an original Tigré word, but introduced from Arabic. It seemed unlikely that this feminine form of *'am* should have been retained from ancient times when the word *'amm* was itself unknown. This suspicion was confirmed by comparison with the Ethiopic in which no words for either kind of uncle existed originally, brother of father and brother of mother being used for these relations. In later Ethiopic versions of the Bible *dūd* has been introduced to mean paternal uncle, *hal*, *halto*, and *amaityĕ* in Tigré are thus a borrowing from the Arabic.[2]

III. The Plural of "Father" in Hebrew and Arabic

In Hebrew and Arabic the plural of the word for father is formed by adding the regular ending for feminine nouns. The explanation accepted by Semitic scholars is entirely unsatisfactory from an anthropological point of view. Broken plurals, which are common in Arabic, are treated as feminines; abstract nouns are also feminine, so that the plural of father is considered to be an abstract, meaning fatherhood.[3] But fatherhood is not a primitive conception at all, and, therefore, *a priori*, it is unlikely that fatherhood should have been an earlier meaning than fathers for the noun in the plural form. Further, people using the classificatory system, though they may think and speak of their own father or of the father of so-and-so, do not think or speak about the individual fathers of various people; these, if of the same generation as their own father and his brothers;

[1] Yiba was always said in answer to the question, "What do you call 'so-so'", when the person named was informant's father, it is, therefore, probably a vocative.

[2] I am indebted to J. Leveen for this information.

[3] I am not clear whether Semitic scholars consider abstract nouns as originally and essentially feminine, or that as the abstract ending is the same as the feminine ending, the two forms have been confused.

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would naturally fall into the group of fathers, i.e. the group of elders to which their own father belongs. All other men of their father's generation would be either mother's brothers or fathers-in-law, or else they would be entirely outside the social group.

The view that the plural of "father" originally indicated a group of men of the generation of the speaker's own father, and that the primitive Semitic stock used the term father in the classificatory way just as the Beni Amer do at the present day,[1] throws light on problems which might otherwise have been regarded as purely linguistic, and brings the peculiar formation of the plural of father in Hebrew and Arabic in line with Meinhof's Law of Polarity. By this law, which was first enunciated for Fulane, ". . . a person in the plural becomes a collection of people, which may be looked upon as a thing, and is therefore treated as belonging to that class. Reversing, we say 'Therefore, the plural of a thing will be a person'. Thus we see that the masculine and feminine genders have been developed out of the relations between persons and things. In exact correspondence with Ful we find that the Somali masculine plural takes a feminine form and the feminine plural a masculine form." [2]

If the Law of Polarity be considered to apply to Arabic, it not only explains the peculiar plural formation of the word for father, but gives a reasonable theory for the perverse behaviour of the numerals and the treatment of broken plurals.[3] I do not know whether

[1] It must be borne in mind that the classificatory system of relationship is not in itself evidence for group-marriage, and no further significance is attached to it than is indicated in the footnote on p. 51.

[2] Carl Meinhof, *An Introduction to the Study of African Languages*, translated by A. Werner, p. 149.

[3] Broken plurals are treated as feminine singular, the adjectives and verbs agreeing with a broken plural noun take the feminine singular endings. The numerals 3–10 have feminine endings when applied to masculine nouns, and the masculine endings when applied to feminine nouns. The following is an extract from a letter Professor Langdon was kind enough to write me on the subject. "It is customary in Semitic to use the numerals 3–10 before masculine plurals in the feminine. This is probably due to the fact that a group of three or more was at first regarded as a collective or an abstract idea. Three men was regarded as threeness of men, hence the numeral 3 was written with the abstract ending *atu* or *a* in Hebrew, usually in the construct *at*, *eth*. Naturally this syntax arose with masculine plurals first. When they wished to use these numerals before feminine plurals nothing remained for them to do but to differentiate by dropping the abstract ending of the numerals. This abstract ending *at* is identical with the feminine ending, and consequently it looks as though they employ feminine numerals before masculine plurals and masculine plurals before feminine plurals." I quote it with full acknowledgment and thanks, and feel that it is almost ungracious to point out that the word "naturally" betrays an attitude of mind philological rather than anthropological.

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Professor Meinhof's theory has been accepted by Arabic scholars, but since writing the above I have looked up *Die Sprachen der Hamiten* and see that Professor Meinhof considers the very points that I have indicated as evidence of Polarity in Semitic languages. "So, for example, the Hebrew *ab* " father " takes the feminine plural and *iššā*, " woman," the masculine plural. The masculine substantive takes the feminine form of the numeral, the feminine the masculine." [1]

IV. The Semitic Terms of Relationship

The principal relationship terms are given in the table printed on p. 56; a few other terms which are of interest in the languages in which they occur, but not of importance to the whole group, have been left out purposely so as to make the table concise, and will be treated separately in the text.

A glance at the table will show the remarkable similarity between the majority of terms. That this similarity should have been preserved throughout a long period and over so wide an area is in itself important. Moreover, it immediately throws the divergencies into relief and seems to challenge a sociological explanation for them. The most striking features are :—

(i) There is no word for father's brother common to the Semitic languages.

(ii) Nor is there a word for mother's brother running through the group.

(iii) Words related to the Assyrian *emu* are common to the whole group with slight differences of meaning.

(iv) The words father, mother, brother, sister, son, and daughter are similar throughout the group.

The absence of a common word for father's brother, the actual classificatory use of *yiba* my father (i.e. for my father's brother) among the Beni Amer and the peculiar formation of the plural of the word for father in Hebrew and Arabic all point to the conclusion that the Semitic relationship systems are founded on the classificatory system.

The words for *son and daughter, brother and sister* in Arabic, Hebrew, and Tigré can all be derived from the Babylonian terms, and call for no comment except that in the Sudan the word *walad* from the root

I cannot understand why this syntax arose first with masculine nouns, and fail to see why it should be a natural development of a language when still in a comparatively primitive form.

[1] Carl Meinhof, *Sprachen der Hamiten*, Hamburg, 1912, p. 227, footnote 1.

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ENGLISH.	BABYLONIAN.	HEBREW.	ARABIC.	MALTESE.	TIGRE (Beni Amer).	AMHARIC.
Father	abu, pl. abê	ab אָב, pl. אָבוֹת	ab اب, pl. abahat ابهات	missier, pl. missiriet	yiba	abbat
Mother	ummu	em אֵם	umm امّ	omm	yuma	mat
Son	binu (rare) maru	ben בֵּן	ibn ابن	iben	walie	lij
Daughter	bintu (rare) martu	bath בַּת	bint بنت	bint	walatie	syet lij
Uncle						ggwœt
Father's brother	(possibly) emu rabu	dōd דּוֹד	ʿamm عمّ	ʿamm (obsolete) ziu (modern)	yiba	
Mother's brother			ḫal خال	barba	halie	
Aunt						akist
Father's sister		dōdoh דּוֹדָה	ʿamman عمه		amaitye	
Mother's sister			ḫala خاله	ʿamont (obsolete) zia (modern)	halto	
Father-in-law	emu					
Wife's father		ḥôten חֹתֵן	ḫatan ختن	ḥaten	hamue	amat
Husband's father		ḥom חָם	ḫamu حمو	ḥmu		

The transliteration of Hebrew and Arabic in these papers is taken from the scheme printed in the *Encyclopædia of Religion and Ethics*. Edited by James Hastings. Vol. I.

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w.l.d. (Assyrian, Hebrew, and Arabic), meaning to bear, is more frequently used than *ibn*, a son.

Father.—The Babylonian, Hebrew, and Arabic words for *father* are practically the same. The Maltese word for father is puzzling. It may be supposed that the Semitic word has disappeared, and a word of Italian origin, related to *messere*, master, has taken its place,[1] as other words of undoubted Italian origin occur in the system.

Father's Brother.—There is no word for father's brother in the Babylonian texts, nor is there any word in Hebrew. The rather doubtful translation of *emu rabu* as uncle will be considered later.

In Arabic the word for paternal uncle is *'amm*. Though this word means father's brother, it is used in a much wider sense. Among the Kababish where I made a genealogical table of the chief's family, the brother of the paternal grandfather was regarded as *'amm*, and in some cases when the relationship had to be sought several generations back, the descendants still spoke of one another as *ibn 'amm* and *bint 'amm* respectively.[2] Generally speaking, among Sudan Arabs the son of the *'amm* means a member of the speaker's tribal division. Everywhere among Arab-speaking peoples *'amm* is a polite form of address to an elder or superior in rank. In Egypt a man addresses an old man of inferior rank, to whom he wishes to speak pleasantly, as my father, not as my *'amm*. Doughty relates that a lad of the family of the Emir of Jebel Shammar told him that though he loved his father's feeble-minded brother, "he did not name him 'ammy, mine uncle."[3]

If Arabic is based on a classificatory system and the term for father originally included father's brother, it is necessary to consider whether the use of *'amm* for father's brother in Arabic may not be a comparatively late introduction. *'Amm*, meaning father's brother, is not found in Hebrew, Tigré, or Amharic. In Maltese *'amm* was used for father's brother, but has been supplanted by an Italian word *ziu*. Robertson Smith points out that *'amm* is used by an Arab writer as in Hebrew, meaning people, when referring to a tribe who refused to

[1] Dr. Zammit does not believe this to be the case; he considers that *missier* is derived from a Maltese verb *sarisir*, to, become, ripen. In favour of the antiquity of *messier* in Maltese, he states that "Our Father which art in Heaven" is translated *messierna*, and he asserts that *ab* does not occur at all in Maltese. In personal names, such as Bu-Hagar, one might see an abbreviation of *abu*, and this is the view of some scholars. Words such as *busuf*, a hairy beetle, *butwila*, a very tall man, are common and are analogous to a common use of *ab* in Arabic.

[2] *Varia Africana*, op. cit., p. 138.

[3] C. M. Doughty, *Travels in Arabia Deserta*, 1888, vol. ii, p. 29.

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desert another branch of the same stock, and called them the "sons of its *'amm*". He adds that *'amm* in the sense of paternal uncle, which is a use peculiar to Arabic, seems to be a comparatively late development.[1]

We have seen that by the Sudan Arabs the word is used almost in a classificatory way. This is something of a paradox, for the classificatory system should not have a special term for father's brother, and the Sudanese use nearly approaches the sense mentioned by Robertson Smith, a view supported by Wellhausen, who says that probably the original meaning of *'amm* is "those united, connected, related".[2] Hugo Winckler also considers "gens" to be the earlier meaning of *'amm* in Arabia.[3]

While the word *'amm*, meaning uncle or kinsman, does not occur in Hebrew and it is common with the meaning "people", scholars are not agreed as to which is the prior meaning. A conclusion the reverse of that of the authorities mentioned above is held by Dr. Paton,[4] and apparently is also supported by the late Dr. Buchanan Grey. As *'amm* occurs in proper names in Hebrew, the difference of opinion arises from the translation of these names. It is therefore necessary to examine the evidence on which these conclusions are based, for if the authorities are right who consider that *'amm* existed in Hebrew as a kinship term and thereby infer that this meaning is older than the meaning "people", much of my argument falls to the ground. For if Hebrew lost its definite word for paternal uncle (it must be noted that Dr. Buchanan Grey gives it a wider meaning, such as agnate or kinsman), it might be inferred that Tigré, also, once possessed a word for paternal uncle and that it had been lost. It would, however, be very difficult to explain how, if once the term for this relative had passed into disuetude, it could have been replaced by the term meaning "father".

There are seventy-five names compounded with *ob* and *oḥ* in

[1] Robertson Smith, *Kinship and Marriage*, London, 1903, p. 72.

[2] J. Wellhausen, *Göttinsche Nachrichten*, 1893, p. 480.

[3] Hugo Winckler, Arabish-Semitisch-Orientalisch: *Mitt. der Vorderas Gesellsch*, 190–4, p. 15.

"The two main differences in relationship which the Semitic languages know are *am* and *ham*, the former indicates in later [times] the father's brother, the latter relatives acquired through marriage. As the former also means 'das volk', it is clear that this is the original meaning of the word, the members of the 'gens' who, because of their blood relationship, belong together as brothers and do not marry within themselves."

[4] *Encyclopædia of Religion and Ethics*, Art. Amm.

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Hebrew, and only nineteen with *'amm*. If it can be shown that these nineteen names correspond closely with those in *cb* and *oḥ*, where there is no doubt about their translation by the relationship terms father and brother respectively, then it is argued *'amm* can also be translated by a relationship term.

Of these nineteen names, six are place names, which are not found at all in names with *ob* and *oḥ*. The nineteen names fall into five different formations, two of these formations are not found in the names *ob* and *oḥ*, and ten out of the nineteen fall into these two groups.

In the six place names Dr. Buchanan Grey considers that *'amm* cannot be translated kinsman, and may mean people. Among the thirteen personal names there are three in which Dr. Buchanan Grey does not accept the rendering kinsman, and two that he considers obscure. Thus, eleven out of nineteen cannot be considered parallel to the names compounded with a relationship term. Of the remaining eight personal names, Dr. Buchanan Grey says: "The parallels in favour of עם [*'amm*] denoting kinsman or being a divine name, balance one another, at first sight the parallels in the remaining names with names in יה [God] appear to incline the balance in favour of עם being a divine name. But the balance of probability is at best very slight, and on other grounds it seems to me most likely that in the names parallel to names in אב [father] and אח, the element עם means kinsman." [1]

It is recognized that *'amm* is one of the earliest and widest spread of Semitic designations of the deity. Though in origin it is looked upon as a title like El, Baal, Adon, and Melek, in certain cases it became the proper name of a deity. The chief god of Kataban (South Arabia) was *'Amm*.[2] Dr. Buchanan Grey rejects the translation of *'amm* in these names by the name or title of the deity, because of the improbability of so pronounced a cult of this god in Palestine as the occurrence of such names would imply, Kataban, the centre of this worship, being remote from, though not out of communication with, Palestine. In favour of the translation kinsman, he brings forward the evidence of Himyaritic names. In these, the element *'amm* can be paralleled with other relationship terms, but it should be noted that they are found in a part of the world where the god *'amm* was worshipped. While making use of the same evidence, Mr. Paton seems to draw his con-

[1] Buchanan Grey, *Studies in Hebrew Proper Names*, p. 54.

[2] Buchanan Grey, *Encyclopædia Biblica*, Art. Ammi., and *Studies in Hebrew Proper Names*, p. 42 et seq.

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clusion largely from the social organization of the Semites. Here he follows Robertson Smith and McLennan in supposing that the Arabs passed from matrilineal to patrilineal descent by means of a period of polyandry. But Mr. Paton brings no fresh evidence in support of this hypothesis, which is not generally accepted by anthropologists.[1] Thus we see there is no positive evidence in favour of the translation of *'amm* in these names as kinsman.

Apart from this doubtful use of *'amm* as kinsman in Hebrew, the antiquity of *'amm* as a relationship term depends upon its use in Sabæan.

Although the Hebrew Lexicon [2] gives both the meanings, " people " and " paternal uncle ", to *'amm* in Sabæan, all the references to the latter meaning are also to proper names. Dr. Buchanan Grey, in a letter, stated that there is a Sabæan inscription [3] in which עם is used in the plural, and must refer to individuals, and he translates the word kinsman or agnates, not paternal uncles. Further light might be thrown on the subject of the antiquity of *'amm* as a relationship term if it could be determined whether *'amm* in Maltese belonged to the early Semitic stratum of the language, or whether it is due to more recent Arabic influence. Again, although *'amm* does not occur in Amharic, *amat* means father-in-law and mother-in-law.[4] The derivation of this term is also important, it is possible that it may be derived from the Assyrian root *emu*. If, however, it was borrowed from Arabic, it must have been introduced at a time when the marriage with the paternal uncle's daughter had become customary and the word had already acquired the secondary meaning of father-in-law that it now possesses in Arabia.

A further difficulty arises in that Professor Langdon has translated *emu rabu*, literally " great father-in-law ", as " uncle ", but in giving this meaning he tells me that he does not imply any connexion between the uncle and the father-in-law, and suggests that " great father-in-law " might be used as a courtesy term for the uncle. No other word for uncle occurs in the Babylonian texts, and *emu rabu* is only found in the syllabaries which are comparatively late, and date from about 2200 B.C. *Emu rabu*, not found in the numerous texts but only in syllabaries, is given as the equivalent of a Sumerian word *murum*, which could not be translated by *emu* alone. Professor Langdon

[1] For further discussion of Robertson Smith's hypothesis see *Studies in Semitic Kinship*, 11, Cousin Marriage.

[2] Brown, Driver, & Briggs.

[3] *Corpus Inscriptionum Semiticorum*, iv, 376.

[4] C. H. Armbruster, *Initia Amharica*, Cambridge, 1910.

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states that *emu* alone without the addition of *rabu* means father-in-law, and this word is common and is found in the earlier texts.

It was necessary to make this statement, as it is on Professor Langdon's authority that the meaning "uncle" has been attached to *emu rabu*. He very kindly went into the evidence for this translation for me, and came to the conclusion that the word is late and uncommon, only occurring in the syllabaries, that it means something different to *emu*, and it was because there was no word for "uncle" that he had suggested this interpretation. If this suggestion be accepted, its implication must be considered in the discussion of cousin marriage.

Mother's Brother.—There is no word either in Babylonian or Hebrew meaning mother's brother. In Arabic خال *ḫal* from the root to "administer"; *halie* (my maternal uncle) in Tigré. The root of this word does not occur in Babylonian,[1] nor is it represented in Maltese. The plural اخوال *aḫwal* is used to mean "mother's kinsmen", but among the Kababish who so seldom marry a woman out of their own division, a man's mother's kinsmen are generally his own kinsmen, therefore his *Aulad 'amm*. However, in those few cases where a man had married a woman of another division, the son referred to his mother's relatives as his *aḫwal*. The feminine form means mother's sister and wife of the mother's brother. In Hebrew דוד is used for uncle, both the brother of the father and the brother of the mother, but this word also means a beloved one or friend.

Father-in-law.—Words with the root *ḥ.m.*, meaning father-in-law, related to the Babylonian root *emu* are common to many Semitic languages,[2] and are also found in Tebdawi, a Hamitic language spoken by the Hadendowa, a people closely related physically to the Beni Amer.

The Babylonian root means "to surround, to guard".

Arabic	.	*ḥam(w)*.
Hebrew	.	*ḥam*.
Ethiopic	.	*ham*.
Aramaic	.	*hama*.
Tigré	.	*hamue* (with 1st pers. poss. pron.).

[1] I am indebted to Professor Langdon for this information.

[2] I am indebted to Dr. Alan Gardiner for the information that the Coptic word *shom*, also found once in the eighteenth dynasty, may be an equivalent of the same word. If this is so, it suggests that the word is common to both the Hamitic and Semitic groups. Its presence in Tebdawi alone would not be conclusive, as it might be a borrowed word.

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Though the word *ḥam(w)* means father-in-law in Arabic, and though this is the meaning given in the dictionary, and the feminine form means mother-in-law, colloquially it is only used for wife's brother. In Tigré it means father-in-law. In Egypt and the Sudan the word for father-in-law or mother-in-law would never be used as terms of address. The polite form of address to a father-in-law is "paternal uncle". When a man has made the usual Arab marriage with his paternal uncle's daughter, his father-in-law is his paternal uncle, but the same term is used when husband and wife are unrelated.

The usual term for father-in-law and all wife's relatives in general, both in Egyptian and Sudanese Arabic, is *nasib*, but even this would be considered impolite as a term of address. It is curious that the root نسب means "to trace the pedigree of", and *nasib* is given in the dictionary as relative, kinsman. *Nisbah* is the common word in colloquial Arabic for "genealogy". Thus, it should mean related to by blood, not united by marriage, so it presumably came into use after the *bint 'amm* marriage had been established. I have been unable to trace this word in other Semitic languages.[1]

Relatives by Marriage.—Another group of words for relations by marriage occurs in Babylonian, Hebrew, Arabic, and Maltese. These words are derived from the root h.t.n.

Hebrew חֹתֵן *ḥôtên* wife's father.
In the feminine, wife's mother.
חָתָן *ḥoton* daughter's husband.
Bridegroom.

The verb is only represented in the hithpæl and means "to make oneself a daughter's husband" or "form an alliance with".

Arabic خَتَنَ *Ḫatan*—relation by marriage, wife's kinsman.

خُتُون *Ḫutun*—relationship on the wife's side.

These words occur in the literary language, but are not used in the colloquial dialects of Egypt or the Sudan.

In Arabic the verb خَتَنَ in the first form means "to

[1] Professor Langdon tells me it is not found in Babylonian, and Mr. H. Lowe has kindly looked in several Hebrew lexicons, and has been unable to find the root.

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circumcise " ; in the third form " to ally oneself by marriage ", and in the eighth " to be circumcised ".

Babylonian . .	*Hātanu*—a son-in-law.
Aramaic . .	*Hātna*—a son-in-law.
Maltese . .	*Hatim*—father-in-law.

In old Hebrew it is only the husband's father (i.e. woman speaking) who is addressed as *ḥom*,[1] whereas in the other languages words from this root mean relative by marriage irrespective of the sex of the speaker. This seems to emphasize the importance of the distinction between husband's father and wife's father, thus stressing the function of the wife's father (the חֹתֵן) as opposed to the husband's father (the חם). In Arabic where words from the root h.t.n. occur, it appears that they might have been used for relatives by marriage, but primarily designated the relationship between a man and his wife's father.

This connexion between the words circumcision and marriage has led to speculation as to the origin of circumcision as a preparation for marriage.[2] I do not propose to enter this discussion, but that two such ideas are expressed in the same root cannot be accidental, although this connexion may hold for only a small part of the area in which circumcision is found. This rite is one of the elements of the Hamito-Semitic culture complex, and is performed at varying ages.[3] Professor Langdon states that it was not practised in Babylonia, and that the word *hātanu*, a son-in-law, means " one who is protected ", and the root is found in such names as " Protector of the Poor ". If " to protect " is the original meaning of the root and hence the meaning of father-in-law as the protector of the son-in-law, then the word should date back to matrilineal conditions, and it must be supposed that some fresh cultural influence introduced circumcision. The wife's father now became the circumcisor, presumably in order to prevent his daughter marrying an uncircumcised man.

Another and totally different explanation is possible, i.e. that the offices of circumcisor and father-in-law only became confused after the introduction of the marriage with daughter of the father's brother. In this case we must suppose that the operation was always performed

[1] In late Hebrew and Aramaic, husband's and wife's father: Brown, Driver, & Briggs, *Hebrew Lexicon*.

[2] Articles " Circumcision ", " Introductory ", " Muslim and Semitic ": *Encyclopædia of Religion and Ethics*. In these three articles varying views are held on the subject.

[3] C. G. Seligman, " Some Aspects of the Hamitic problem in the Anglo-Egyptian Sudan ": *Journal of the Royal Anthropological Institute*, vol. xliii, 1913.

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by the father's brother at whatever age was customary in the tribe; as to-day, the first shaving of the child's hair is performed by the *'amm* among the Kababish. This does away with the grounds for holding the view that the identification of the father-in-law with the circumcisor necessarily implies adult circumcision. According to Professor Langdon's statements, consanguineous marriages were not allowed in Babylonia, and circumcision is not found. It is, therefore, necessary to suppose that the invading Semites did not influence the Sumerians in these particulars. But, if we can see the remnants of matrilineal descent and exogamy in the meanings of the words *emu*, "one who guards" "father-in-law"; *hātanu*, "one who is protected," "son-in-law," and the Sumerian translation of *emu*, *ushbar*,[1] "side-male," or "male from outside", then we may attribute the change from matrilineal to patrilineal descent to the fusion of the Semitic with the Sumerian culture.

Two entirely opposite phenomena may result from the change from matrilineal to patrilineal descent. Each is dependent on the dominance of a certain idea. When the consanguineous marriages are regarded as incestuous, and the fear of incest is the dominant idea, then marriages which previously were only forbidden with relatives on the mother's side become prohibited between persons who can trace any relationship at all. There is evidence that this has happened among many peoples in Africa, including the Nilotic tribes and the Baganda. On the other hand, when the inheritance of property has been the dominant idea, and it is backed by a sufficiently strong social organization, tribes have been able to discard their ideas of incest and adopt practical endogamy. This has also happened, and is spreading to-day, in Africa with the advance of Islam.[2] Whereas the former process with the recognition of consanguinity and the prohibition of all consanguineous marriages seems to have been the result in Babylonia, among such Semites as the Hebrews and the Arabs the opposite result is seen, i.e. the obliteration of such bars to marriage as practically to amount to endogamy.

Before leaving the subject of the father-in-law, another point must be brought forward. It is remarkable that there should be no

[1] In Sumerian there are five recognized signs for father-in-law and a sixth, *ushbar*, which is dependent on a gloss. The sign for father-in-law is equated with that for the *bârû*, the highly worthy "mage". Bruno Meissner, "Das Ideogramm für den Schwiegervater" *Orientalistischer Litteratur Zeitung*, vol. x, 1907, p. 90.

[2] For a fuller discussion of this subject see "Cousin Marriage", Studies, etc., II.

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general Semitic word for mother's brother; if, as we have supposed, *ab* was originally used in the classificatory sense, by analogy with other systems, there should be a word to distinguish the mother's brother. Instead of this, the word we find running through all the Semitic systems is some derivative of the root *ḥ.m.*, used to mean "related by marriage", the oldest known form being the Babylonian root meaning to "guard". A word meaning protector or administrator is just what would be expected for the status of mother's brother, as that is the function of the mother's brother in matrilineal society. Thus, it is possible that the words derived from the root *ḥ.m.*, to guard, may not originally have meant father-in-law, but mother's brother. This is no more than a conjecture, but when the change in the use of the word denoting father-in-law in Arabic is considered, it does not seem an impossibility. In contradistinction to the paucity of words for uncle in Semitic languages generally, there are, as we have seen, several words for father-in-law. In Arabic there are no less than three words, all derived from separate roots, to designate the father-in-law, yet as the father-in-law is a person to whom the greatest respect must be shown, all these words have dropped from current speech and he is addressed as paternal uncle by a man (a woman would not address her father-in-law directly).

V. The Arabic Terms for Father-in-law

The Arabic words for father-in-law are:—

(i) *Ḥom*, derived from the root "to guard" or "to protect", has almost dropped out of colloquial Arabic, but is used in the Sudan to mean a brother-in-law.

(ii) *Ḥatan*, derived from a root meaning to circumcise, only occurs in the classical language. (For consideration of the meaning of this term see above.)

(iii) *Nasib* derived from a root meaning to trace descent, is the colloquial word, but is only used when speaking of the father-in-law, not when addressing him.

(iv) *'Amm*, really father's brother, is now the polite form of address to the father-in-law.

From the meanings of these terms it is obvious that the concept father-in-law is not a simple one such as father, mother, or brother. The latter imply less complex relationships corresponding to their congenital origin. The relationship of father-in-law, on the other

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hand, not being congenital, but acquired, often with considerable effort, corresponds to, and implies, a less simple and a more fluctuating concept due to its acquired character, as against the static nature of the former. It cannot be a coincidence that the father-in-law is addressed as paternal uncle when the customary marriage is with the daughter of the paternal uncle, although it might be suggested that as *'amm* is an honourable term of address, it would naturally be used for a person so highly respected as the father-in-law. There is, however, no reason to revere the father's brother more highly than the father, and it is more likely that the *'amm* has acquired its honorific significance since the marriage with the daughter of the *'amm* has become customary, and the *'amm* had become the father-in-law; respect being due especially to that relative who will eventually provide a bride.

In like manner *nasib* could only have come into use for father-in-law at a time when marriage with relatives was permitted.

All these words which are (or have been) used for father-in-law in Arabic had originally other meanings; and, just as at the present day, paternal uncle has come to mean father-in-law, it may be that *ḥom* was not originally father-in-law, indeed the meaning *protector* points to the possibility that the word may have once meant mother's brother. The change from mother's brother to father-in-law is a very easy one among matrilineal exogamous peoples—in fact, among many such peoples the one word serves both functions, for among them the correct marriage is the cross-cousin marriage, i.e. marriage with the mother's brother's daughter. Tempting as it would be to suppose that this had been the history of the word—first mother's brother, secondly father-in-law (at a matrilineal exogamous period), then thirdly with a change to patrilineal conditions and the practice of consanguineous marriages—" father-in-law," allowing any, or no relationship between bride and bridegroom; tempting as this would be there is not at present sufficient evidence to support this hypothesis. There is considerable evidence for previous matrilineal conditions among Semitic peoples, but I cannot find any for cross-cousin marriage. Here I must dissent from Sir James Frazer's view that the marriage of Jacob was a typical cross-cousin marriage, for though Rachel was the daughter of Jacob's mother's brother, Jacob's grandfather and Laban's grandfather were brothers.[1] Such a marriage might take place anywhere to-day among Arabs who favour marriage with the paternal uncle's daughter. If this

[1] For further discussion see " Cousin Marriage ".

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suggestion that *hom* may have originally meant mother's brother be considered, the change must have taken place very early because the word is so widely distributed with the meaning "relative by marriage". For one factor stands out clearly, viz. the words derived from *h.m.* have a wide distribution and all mean some person related by marriage. Then, if there has been a change in meaning, it must have happened very early, presumably as a result of the contact of Semites with non-Semitic peoples. Before this time it may have meant mother's brother, and if cross-cousin marriage did exist at that time it would have meant father-in-law as well.

VI. Conclusions

The outstanding features of the Semitic relationship terms are that the words for father, mother, and father-in-law—*ab, um, hom*—run right through the group, and there is a paucity of words for uncles, the brothers of the father and the mother respectively.[1] Only in Arabic and Maltese [2] are both kinds of uncles distinguished. Considering the classificatory use of *ab* among the Beni Amer, and peculiar formation of the plural in Hebrew and Arabic, and the lack of any word for paternal uncle except in Arabic and Maltese, we may conclude that *ab* was used in a classificatory way throughout the Semitic group, and that the Semitic relationship system is based upon clan organization. Rivers [3] has put forward the view that the Semitic and Nilotic relationship systems are based on the institution of the extended or patriarchal family, and called this type of system the "kindred" system. If I am right that the Semitic system was originally based upon the clan, the "kindred" system is only a development of the clan system.[4] Further, from the fact that words from the root *h.m.* are found in all these languages, it must be assumed that the wife's father did have a definite status, which was different from that of the father, and from the father's brother, and it has been

[1] *h.m.*, however, does not occur in Maltese.

[2] The Maltese relationship terms have obviously gone through much change. *Barba* is used for mother's brother; this is a Lombardy word for uncle. The father's brother is called *'amm.*

[3] *Kinship and Social Organization*, p. 78 et seq.

[4] I am not certain whether this term should be retained. I hope to be in a better position to judge when I have worked out the material I have on the Nilotic systems. Unfortunately, I never discussed this point with Rivers, although he read the first draft of this paper and gave me great encouragement to finish and publish it, agreeing as far as I can remember, with all my main points.

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suggested that this root might originally have indicated mother's brother, though there is not sufficient evidence to prove this point.

In this article I find that I have touched upon a very large number of problems, many of which would well repay more detailed study, which I am not competent to give. I feel linguists will scorn my attempt to base any conclusion on the comparative study of mere isolated words, and were the words any other than terms of relationship I should look upon such an attempt as unscientific. But relationship terms have an innate social significance and hence are both very stable in meaning and at the same time peculiarly liable to modification from social causes. As language is, above all, a social phenomenon, I have thought it worth while to see what I could learn from this attempt. While I am not ambitious enough to suppose it possible to furnish a solution to such questions as the working of Polarity in Arabic, the connexion between circumcision and marriage, the social system of Babylonia, or the spread of Semitic culture, I wish to urge that the detailed study of relationship terms can throw some light on all such weighty matters.

(To be cointnued.)

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PROF. G. ELLIOT SMITH

Sulle migrazioni dei marinai mediterranei

IN OCEANIA E IN AMERICA

nei tempi pre-colombiani

(*Dal volume giubilare in onore di Giuseppe Sergi*)
Vol. XX della RIVISTA DI ANTROPOLOGIA

ROMA
PRESSO LA SEDE DELLA SOCIETÀ
Via del Collegio Romano, 26
1916

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Prof. G. ELLIOT SMITH
dell'Università di Manchester

SULLE migrazioni dei marinai mediterranei in Oceania e in America

NEI TEMPI PRE-COLOMBIANI (*)

Come umile tributo al grande Maestro, le cui ricerche luminose hanno sparso una luce così viva sulla storia degli abitanti primitivi del littorale mediterraneo, mi sono proposto di svolgere alcune induzioni a proposito delle migrazioni più remote della popolazione mediterranea. Nel corso delle mie osservazioni considererò non solo i membri della razza mediterranea del Sergi, ma anche quell'altro popolo di fondo armenoide, che si mescolò con loro all'alba della storia. Il periodo del quale mi occupo principalmente non risale oltre la fondazione di Roma, quando la popolazione del Mediterraneo occidentale era già molto mescolata. Quale che sia stata effettivamente l'area di caratterizzazione della « razza bruna », non può esservi dubbio che questa razza, prima di essersi mescolata sensibilmente con le altre razze, si è sparsa sulle spiaggie del Mediterraneo, nel Nord-Est dell'Africa, in Arabia, nel Sud della Persia e nell'India (1). È anche certo che in vari modi e in epoche diverse la branca orientale della « razza bruna » subì, dalla Somalia all'India, incroci coi popoli negroidi.

La popolazione dell'Egitto e del Mediterraneo orientale ricevette una forte infusione dello stock armenoide al momento della inaugurazione della I Din. egiziana, cioè circa al 3500 av. Cr. È probabile, se si giudica dalle fattezze delle più antiche statue-ritratti, che forse alla stessa epoca la « razza bruna », la quale abi-

(*) Traduzione della Sig.ra Liliana Giuffrida-Ruggeri.

(1) G. Sergi, *Gli Arii in Europa e in Asia*, Torino 1903, p. 150.

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tava nel fondo del Golfo Persico, subì anch'essa mescolanze coi membri dello stesso stock.

Adoperando il termine « armenoide » del von Luschan è facile che una certa confusione si introduca nell'argomento; poichè questa denominazione include una quantità di popolazioni, che mostrano variazioni considerevoli. Il popolo « armenoide » tipico, quello con crani larghi, con l'occipite verticale, col naso molto stretto, aquilino e sporgente, e il tipo raziale chiamato generalmente « alpino », presentano caratteri distintivi che li separano dagli Armenoidi meridionali loro affini, i quali sono apparsi nella valle del Nilo e del Tigri. Questi ultimi non erano tanto brachicefalici, nè avevano le fattezze facciali tanto accentuate, quanto i loro fratelli del nord. Non si può mettere in dubbio la loro origine comune. Tuttavia vi è una differenziazione definita nei loro caratteri fisici come nei loro caratteri morali e mentali, perchè a differenza della branca settentrionale gli Armenoidi meridionali presero una parte cospicua in tutte le grandi imprese marittime nel Mediterraneo orientale, nel Mar Rosso e nel Golfo Persico dall'alba della storia. In considerazione di questa specialità caratteristica li ho chiamati gli « Armenoidi marittimi » (1), per distinguerli dai loro affini settentrionali, la cui preferenza per le regioni montagnose ha loro guadagnato la designazione di « Alpini ».

Quattro anni fa, appena ebbi terminato il manoscritto del mio piccolo libro sugli Egiziani antichi, nel quale avevo definito i caratteri distintivi degli « Armenoidi marittimi », che apparvero nell'area mediterranea cinquantaquattro secoli fa, ebbi la sorpresa di vedere nel Museo Anatomico di Cambridge alcuni crani che riproducevano esattamente e in tutti i particolari quegli esemplari stranieri da me notati nell'Egitto, e di scoprire che erano provenienti dalle isole Chatam nel Pacifico del sud. Allora non riuscii ad avere informazioni soddisfacenti per spiegare questa straordinaria identità di tipo fisico. Ma, sommando i risultati delle ricerche da me fatte negli ultimi quattro anni, ho avuto prove convincenti che le stesse migrazioni, le quali partivano dal Mediterraneo orientale nel sec. VIII av. Cr., arrivarono infine nell'Oceania e sulle coste dell'America (2).

(1) *Racial Admixture in Egypt*, The Eugenics Revue, October, 1915.

(2) *The Significance of the Geographical Distribution of the Practice Mummification*. Proc. Manchester Literary and Philosophical Society, 1915 (: stampato sotto il titolo *The Migrations of Early Culture*, Manchester Unive

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Queste migrazioni cominciarono sotto la forma di rapporti commerciali fra il Mediterraneo orientale e l'India nel sec. VII av. Cr. I Fenici controllavano la maggior parte di questo commercio, ma i marinai delle loro navi erano reclutati dai porti del Mediterraneo, del Mar Rosso e dell'Arabia meridionale. Da questo commercio ebbero origine delle colonie miste di Mediterranei ed Etiopici nell'India, nelle vicinanze delle pescherie di perle e delle miniere, donde traevasi l'oro, il rame e le pietre preziose (vedi Perry, op. cit. *supra*). Fra questi emigrati trovavasi una rappresentanza considerevole di quell'elemento che io ho chiamato lo stock degli « Armenoidi marittimi », il quale nel corso del tempo estese le sue propaggini verso oriente, seguendo la linea di distribuzione delle conchiglie perlifere e prendendo dimora solo in quei luoghi dove potevano praticare l'estrazione dei metalli. Così fu raggiunto l'Arcipelago Malese e l'Asia orientale, e in qualsiasi luogo gli Armenoidi presero dimora si riconosce ancora nella popolazione qualche traccia visibile del tipo fisico armenoide.

Avendo sempre in mira la stessa meta essi passarono attraverso la Malesia e la Melanesia fino nel Pacifico e per tutte le isole del Pacifico centrale meridionale e orientale, le quali divennero popolate da una razza mista di Armenoidi marittimi e Mediterranei, con piccole rappresentanze di elementi etiopici, dravidiani, malesi e melanesi.

Nel corso del tempo questo popolo attraversò l'intiera larghezza dell'Oceano Pacifico e arrivò alle coste dell'America. Fra i residui umani che si trovano lungo la costa occidentale, dalla California al Perù, vi sono parecchi crani che rivelano chiaramente l'influenza di questo stock Armenoide marittimo, il quale aveva percorso tutta la strada dal Mediterraneo all'America, infine raggiunta dopo secoli di viaggi. Nel Nuovo Mondo questo popolo introdusse la civilizzazione che aveva portato dal Vecchio Mondo. La strana miscela di costumi in parte egiziani antichi, in parte micenei e fenici, la quale si vede nella civiltà pre-colombiana dell'America, svela chiaramente il punto di partenza di questa grande

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sity Press). Vedi anche: *The Influence of Egyptian Civilisation in the East and in America*, Bulletins of the John Rylands Library, Manchester, January, 1916; e la memoria di W. J. Perry, *The Relationship between the Geographical Distribution of Megalithic Monuments and Ancient Mines*, Proc. Manch. Lit. and Phil. Soc., October 1915.

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migrazione di cultura; e la quantità degli apporti di origine africana orientale, arabica, babilonese, indiana, indonesiana, cinese, giapponese e oceanica costituisce ugualmente una conferma definitiva della via seguìta da coloro che furono gl'introduttori di tale civiltà.

Così la dimostrazione etnologica corrobora completamente e amplifica ciò che avevamo appreso dallo studio dei caratteri fisici dei Polinesiani. Ambedue i gruppi di fatti si accordano a indicare il Mediterraneo orientale come il punto di partenza della prima veramente grande spedizione marittima nella storia del mondo, una spedizione la quale ebbe per giunta la più profonda influenza sulla storia della civilizzazione, poichè essa fu la disseminatrice dei germi di civiltà fra le popolazioni incolte dell'Oriente, onde si maturarono i frutti così lussureggianti delle antiche civilizzazioni dell'India, Indonesia, Cambodge, Cina, Giappone, Messico, America centrale e Perù.

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Canada
Department of Mines

Hon. LOUIS CODERRE, Minister;
R. G. McCONNELL, Deputy Minister.

Geological Survey

Museum Bulletin No. 6

ANTHROPOLOGICAL SERIES, No. 3 DECEMBER 30, 1914

PREHISTORIC AND PRESENT COMMERCE AMONG THE ARCTIC COAST ESKIMO

by

V. Stefánsson

OTTAWA
GOVERNMENT PRINTING BUREAU
1914 No. 1476

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ANTHROPOLOGICAL SERIES, No. 3.

Prehistoric and Present Commerce among the Arctic Coast Eskimo.

By V. STEFÁNSSON.

If, with reference to the Eskimo, we are to call *prehistoric* all the time that antedates the first visit to them of a white man who puts on record some information concerning them, then some tribes of Eskimo even now may be in the prehistoric period, for it is not certain that there are not tribes whose very names and existence are unknown to us. From this point of view, prehistoric time may include not only to-day but to-morrow. In the following discussion, it will appear just what is meant by "prehistoric" in the case of each tribe or section of the country. In general the past will be inferred from the present condition supplemented by some apparently reliable information through word of mouth.

So far as a research might be based on the published or unpublished accounts of the explorers of the past, this essay will be found wanting, for the sources are not at hand where this is written.

There are three things that chiefly determine the character of Eskimo commerce: the geographic conditions that make

PHONETIC NOTE. The alphabet used in spelling Eskimo names is that of the Bureau of American Ethnology, Washington, slightly modified: *ġ* = *g* in Icelandic *saga* or Norwegian *dag*; *ṙ* = the German guttural *r*, while *r* is as in English; *s* always has a sibilant sound, nearly, but not quite, equal to English *sh*; *tj* = English *ch* in *church*. Other variations from the Bureau of Ethnology alphabet occur, but are of little consequence.

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certain routes of travel more feasible than others; the character of the natural resources of the different districts; and the distribution of the peopled areas (as well as the degree of friendliness of their inhabitants).

In the Eskimo country the great highway of travel is the sea. This is generally known and frequently reiterated by students of the subject, but so habituated are many of us to mentally defining a sea route as a water route, that in making the above statement we speak a fact while we think a fiction. The sea is indeed the commercial highway, not, however, as water but as ice; not as a medium for boat travel so much as (in many districts) the *sine qua non* of rapid sled travel and the hauling of heavy loads by dog teams. Nowhere between Baffinland and Smith sound on the east and Cape Bathurst on the west, did boats probably ever play a considerable part in trade; certain portions of the Greenland coast were about the only localities where the boat completely supplanted the sled. From Cape Bathurst west to Mackenzie delta the use of boats was not interfered with so much by ice conditions as by the fact that the summer season here was the harvest season more absolutely than in most districts, not only because of the annual coming of the caribou, but chiefly because the various sorts of whales, upon which the Eskimo depended for food, fuel, and light, frequented the coast during most of the summer and engrossed the people's attention, while in winter and spring they had plenty of leisure for travel and for trading. The whales pass the Alaska coast earlier in the season and people there have the summer freer; but without sleds such journeys as those of the Point Barrow people east to Barter island and back again, could not have been accomplished. They, therefore, hauled both boats and trading gear on sleds well towards the Colville river as well as a greater or lesser part of the way back, except in the most favourable seasons. It might be hastily concluded that on Bering strait at least, in the commerce between Asia and Alaska, the boat supplanted the sled entirely. It did not, however. In our camp, as I write, is a young man of Port Clarence, Alaska, whose father and older brothers, up to a few years ago, made

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frequent sled trips from their home to the Asiatic side to buy reindeer skins of the Siberian deermen.

So far as the writer knows, it was only in Alaska and near Hudson bay that the rivers played an important commercial rôle. Indians and Eskimo made use of the Yukon. The several rivers north of the Yukon brought the inland Eskimo to the coast, where they bought wares whose ultimate source was in distant Eskimo, Indian, or Siberian communities. Either by boats, or by sleds carrying boats, parties then bent on trade ascended the Kuwûk and Noatak rivers, carried their boats by sled over to the upper Colville, and descended by boats to the sea to meet the Point Barrow people near the western edge of the Colville delta, or traversed one of the easterly delta channels, by which routes they sometimes made their way as far east as Barter island. There was some trade intercourse between the Athabaskan Indians, and the Mackenzie Eskimo on that river and between the Athabaskans and the Coronation Gulf Eskimo on the Coppermine or near it, but in neither of these cases did the waterways, as such, play an important part—indeed the Coppermine can hardly be called navigable and, although portions of it were now and then used by Indians as canoe routes, the Eskimo probably never took their kayaks farther up than Bloody fall, nine miles from the sea. (They do not seem ever to have had umiaks). Chesterfield inlet and the rivers flowing into it were no doubt formerly, as now, ascended by Hudson Bay Eskimo for purpose of trade with the Back river, Arctic coast, and Victoria Island people.

An interesting light is thrown upon the past history of the Athabaskans of Great Slave lake, as well as upon that of the Eskimo, by the fact that, in the early days of the fur trade, these Indians made long and difficult journeys to the Hudson Bay trading posts by a circuitous southern route which was recommended neither by abundance of game (for they frequently starved), nor by navigability of rivers, while (as David T. Hanbury's explorations have shown) there existed a direct route well supplied with game and consisting of readily navigable rivers and lakes—the Akilinik River route still so much used by the Eskimo. Either the Indians did not know of this route, or

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else they knew it was in the possession of the Eskimo of whom they must in that case have been afraid.[1]

Two important overland trade routes (or two sections of the same route) connected the Mackenzie river and Alaska, probably even in the earliest times, with Hudson bay and the Baffinland region. One of these led from the Arctic coast near Ogden bay directly south across Back river (where the people of that river were incidentally met by the coast traders), to the wooded section of the Akilinik between the meridians 106 degrees and 104 degrees west. This route is recommended by no special geographic conditions other than the abundance of game and fish, but it must always have been an important one because it furnished with articles of wood a large section of the north coast of the mainland as well as the populous island settlements. A continuation of this route led (and leads to-day) north across the ice from Ogden bay to Albert Edward bay, Victoria island, and on through Victoria island west by the Ekallūktōk river, which flows into the head of Albert Edward bay, and the Kagloryuak, which falls into the head of Prince Albert sound. These rivers head close together near the middle of Victoria island. This route then led west through Prince Albert sound, crossed to Banks island from Cape Wollaston to Cape Collinson or Cape Cantwell, followed the coast southwest to Nelson head and crossed the sea south to Cape Parry, and thence followed the coast westward. This was in its entirety a sled route except that pack dogs were used between Back river and the Akilinik, and sometimes some distance north of Back river, as well as in the middle of Victoria island, for these sections were traversed in summer. The entire route is still in active use, except the section between Cape Parry and Nelson head, for Cape Parry has long been depopulated and the people at Cape Bathurst have been for more than half a century entirely concerned with white men's wares, obtained first from neighbours of their own race from the west, and later from white men directly. It is remarkable that, although a long time has elapsed since the Hudson's Bay Company and the Scotch

[1] Books are not at hand for exact citations. Consult, however, Alexander Mackenzie's account of the fur trade, and Daniel T. Hanbury's narrative of his exploration of the Akilinik river.

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whalers began to trade in Hudson bay, yet articles of wood still form more than half the entire power-in-exchange of what the trading parties bring home to Victoria island from their visits to the Akilinik. Though we do not know how many centuries have elapsed since these trading expeditions first began, we can say definitely that their object, in so far as they were undertaken by northerners, must have been then the same as it is now—the securing of materials for bows, arrows, lances and spears, snow shovels, dishes, sleds, snow house floors, etc.

The rapidity of trade movement is a question of interest. Beginning at the west, we may trace to advantage some Siberian article, such as a metal knife, that might conceivably have been passed on eastward without falling on the way into the hands of anyone who delayed it by owning it for use. Whether it had come across Bering strait by sled in winter or boat in summer, it would most likely be started on its way to the Colville from (say) Kotzebue sound, through purchase at a summer trading rendezvous on the coast, by Kuwûk or Noatak people who had descended to the sea in boats. These would return up the rivers to hunt the caribou, while the skins were good for clothing and while the animals were fat (in August and September). Not until the days lengthened in the following spring, could the knife easily get to the Colville, but in March or April trading parties would set out to sled over the Arctic divide and in June they would descend the river to (say) the trading centre of Nirlik near the western edge of the Colville delta, where they might trade the knife to a Barrow man going east to Barter island, or they might take the knife to Barter island themselves. Here it would be traded to Mackenzie River (Herschel island) Eskimo in mid-summer, just a year after leaving the coast west of Alaska. By open water it would reach Herschel island or might even get so far east as the east edge of the Mackenzie delta. If we were to suppose the knife to have reached the Barrow people from the west (viz. Point Hope, say), its course would be a little more devious probably, and its progress slower.

The preceding paragraph is based on inquiries of various people now resident at Cape Smythe (Point Barrow) or east of

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there, who themselves came from the west coast along the Arctic or oftener by the Colville route.

There is no information available as to the rapidity of trade movement between the western edge of the Mackenzie delta and Baillie island (Cape Bathurst), for the people of these places almost formed one community, visiting backwards and forwards, and there were no set trade expeditions. It is, however, only conservative to say that the winter from October to March would easily give an article time to get as far east as Cape Parry, from where journeys are said never to have been made to Nelson head except late in March or early in April. If our hypothetical knife had been on its journey 200 years ago, it would no doubt have found then, as we would find now, that well into April the Prince Albert Sound people of Victoria island are at Nelson head hunting bears. They soon start east, however, for they do not spend their summers in Banks island. By the middle of May the entire tribe nears the head of Prince Albert sound and here a few sleds, bent on trade to the eastward, hurry ahead. They ascend the Kagloryuak, descend the Ekallūktōk, and meet the Ekallūktōġmīūt on Albert Edward bay. A few sleds of this tribe join them and all proceed south to the Asiaġmīūt, whom they find near Ogden bay. A portion of this tribe also is going south to the Akilinik river, and representatives of the three tribes join forces. They cannot go far by sled, for summer overtakes them, but loading their dogs and themselves with backloads they "pack" south until they reach Back river, where they find people of that locality with whom they trade and who ferry them in their kayaks across the river. Resuming their "packing" they proceed to the Akilinik above Schulze lake, reaching it in midsummer, two years from the time our knife was traded for on the west coast of Alaska. On the Akilinik are Hudson Bay Eskimo, or at least Eskimo from near Hudson bay, come to get wood and to trade with the westerner. Sometime during the coming winter our knife, if bought by them, might reach salt water. We can say then that the minimum time in which an article by this route could pass from western Alaska to Hudson bay is about two and one-half years. Possibly so rapid a transfer never took place, but we may double the minimum and say with

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some conservatism that articles could easily pass from ocean to ocean in five years.

It is probable that the trade route in question forked at Albert Edward bay—the fork still in active use has already been described (that leading south to the Akilinik). Well known archæological facts[1] indicate that another fork extended northeast across Prince of Wales island and North Devon towards Smith bay. This is made to seem likely by a glance at the chart, and is further confirmed by the statements made to me, of the Kañhiŕyūāŕmīūt, who say that the Ekallūktŏġmīūt of Albert Edward bay have told them of the Turnunirohiŕmīūt, "whom they must have seen, for they tell long stories about them." According to Boas, the Tununirusiŕmīūt (a dialectic variant of the same name evidently) visit North Devon and go "farther to the west." This may anciently have been an important trade route, though now fallen much into disuse.

There is at present an overland trade route from the Akilinik to Umiñmûktok on Bathurst inlet, but it is not clear that it is an ancient one. It is the easterners who come northwest—chiefly the Back River inlanders, but also members of other tribes. My information leads me to think they came first some six or eight years ago (probably as a consequence of Hanbury's journey). They bring chiefly iron ware. Some guns have through their agency even reached Bathurst inlet. In 1911 there were no guns among any of the five Victoria Island tribes visited by us, and no member of four tribes visited had ever heard a gun fired.

Artifacts are now and then discovered on the Atlantic side of the Eskimo country that are almost or quite identical with others known from Alaska. This is considered by many ethnologists as evidence of the extraordinary conservatism of the Eskimo. The inference is that although these tribes are distant both in time and space from the land of their common origin, they still—though a continent separates them—adhere steadfastly to even the minutest and least essential details of construction employed by their forefathers when all dwelt together

[1] F. Boas, Bulletin, American Museum of Natural History, vol. XV, 1907, pp. 463-4.

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in a restricted area; not that an attempt is made to minimize the conservatism of the Eskimo—one sees and hears everywhere evidences of its being a conservatism well-nigh incomprehensible to members of our race. Language, processes, and modes of thought, furnish, however, more convincing evidences of a common origin in a restricted area than do songs, tales, isolated beliefs, and portable artifacts. The Alaskan Eskimo in our employ were not quite a year in contact with the people of Coronation gulf and Victoria island, yet there are few persons now in Coronation gulf that do not know one or more songs from Port Clarence, Alaska, and the Mackenzie delta, while songs composed at Bathurst inlet will within a year or two be sung at Port Clarence, Alaska. One of the most popular songs now heard in Coronation gulf, celebrates the merits of the tea sold at Fort Macpherson, Mackenzie river, and another tells of the wreck of the whaler "Alexander" at Cape Parry (1906), yet these people, when they learnt the songs from us, had never tasted tea nor seen a ship. They talk of mountain goats (as the Greenlanders talk of mammoth) wisely, after seeing my sleeping bag and listening to the hunting adventures of one of our men. They accepted fragments of Christianity promptly on the say-so of my companions—not very orthodox Christianity naturally, for the mental processes of my men are not quite the same as those of the missionary who taught them. They had, when we first came to them, imitations of white men's articles of which few or none had seen the original—e. g., scissors. Knowing the continuity of trade routes between east and west, the rapidity of traffic, the readiness with which new ideas are adopted (modified, of course, to fit into the recipient's scheme of thought), may we not say that identity or similarity (e.g.) of needlecases in Smith sound and Alaska is as likely to be an evidence of the activity of commerce as of a common culture home and rockbound conservatism? And may not a song or story heard in Smith sound and Alaska have accompanied the needlecase from its source in Kotzebue sound? Or, be the needlecase of a material peculiar to Smith sound, then may it not have been made in imitation of an imported article, just as Coronation Gulf Eskimo to-day make scissors (of caribou

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antler and bits of metal) that are imitations, at last analysis, of Sheffield scissors.

Commerce of ideas must accompany commerce in articles and materials. One who tries to decipher culture historical records from among the mass of lore and legends of a tribe gets considerable help through remembering that, though an Eskimo readily adopts new ideas and beliefs, he modifies all of them so as to make them assimilate readily with his previous ideas and beliefs, and he will neither abandon nor greatly modify his previous stock. Hence Christianity, for instance, is not replacing the old beliefs in any locality known to me, but is being superimposed upon them. Certain practices, it is true, are being abandoned—e. g., sorcery. This is not, however, from a lessened faith in the powers of the sorcerer, but because "it is wrong to practice witchcraft." There is, however, a belief (which may indeed always have existed) that the sorcerers of to-day are less powerful than those of the past.

Turning now to the natural resources of each tribe and their commercial intercourse with their neighbours, we will consider first the region between the mouth of the Yukon and the mouth of the Mackenzie. The treatment will be brief, for the reason that the writer has little first hand information regarding Alaskan trade intercourse that is not already in print in one language or another.

At Port Clarence, and other places whose people undertook journeys to Siberia, there arrived each summer, from the south, boats of the Unalit and perhaps other tribes loaded with wooden platters, buckets, dishes, and dippers, which were exchanged entirely for Siberian wares—reindeer skins, jade and other beads, metal articles and (in later times only?) tobacco. These wooden articles were kept at Port Clarence a year, for when the Unalit arrived it was considered too late in the season for visiting Siberia, but the next year they were taken by boat across the strait. Ivory, oil, and other products of sea animals formed an important part of the cargoes, and after the Russian fur trade commenced in Siberia, and perhaps earlier, furs were carried west also. The Siberian wares which formed the return cargoes, were bartered off at the summer trading centres in Kotzebue

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sound and elsewhere, and began their eastward progress by one of two routes—along the coast by Point Hope or overland northeast by the Colville route. There were also winter journeys of less commercial importance from the Bering coast in the vicinity of Kotzebue sound, to the Arctic coast west of Point Barrow.

The main eastward exports of the Bering communities were Siberian goods, beads of native stone, stone and ivory ornaments, and (to the inland tribes) blubber and oil. They received in exchange caribou skins, wolverine and wolf skins (for trimming their clothing), stone lamps, and stone pots.

At Nirlik in the Colville delta, the Barrow people sold Siberian wares, Bering coast ornaments, articles of ivory (mammoth and walrus—the mammoth chiefly found along their own rivers, the walrus purchased from the west), whale oil, whale skin, umiaks of bearded seal, walrus or white whale skin, kayaks of sealskin, sealskin waterboots, unworked sealskins and the skin of the bearded seal for boot sole material. What they chiefly received for all this was caribou skins, with a few wolf and wolverine skins and, in later times, commercial furs—fox, lynx, etc. Proceeding east to Barter island or its vicinity, they traded all the same kinds of articles except oil, whale skin, boats, and sealskin articles. What they chiefly received were stone lamps and stone pots from the Mackenzie people, wolf and wolverine skins and (latterly) other furs from the Mackenzie people and the Indians from south of the mountains towards the Yukon. Both the Barrow people and those of Mackenzie river brought white whale skins to sell, though the Barrow traders probably never had as many of these as the easterners. The purchasers must have been the Athabaskan Indians from the south and those Colville people who had come to Barter island with Siberian and Bering Straits wares.

It may be inferred that the farther east the trading place was located the fewer Siberian and other far western wares were brought to it. Dr. Richardson, if memory serves, states that, in 1846, Siberian wares were not seen by him east of Point Atkinson—they had not reached Cape Bathurst. Richardson had, however, but limited opportunities for observation. Probably

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he identifies the eastern limit of Siberian goods with the eastern limits of Siberian tobacco and Chinese pipes. These had not reached Cape Bathurst when Richardson passed; thus far our own inquiries confirm his opinion, but the very fact that Siberian tobacco had almost reached Cape Bathurst might seem proof of itself that Siberian knives had reached and passed it, just as there are to-day knives from Hudson bay used in Banks island, while the tobacco habit has not passed Back river, if it has penetrated that far west. True, we have not found Siberian goods as yet in any old remains explored east of Cape Bathurst, but we have found fragments of pottery kettles[1] of the sort known to have been made by the Eskimo of western Alaska and supposed generally to have been made by them only. If they

[1] The pottery fragments referred to have been found at Langton bay and near the mouth of a small, unnamed river in the bay behind Point Stivens on the Parry peninsula. To date (July 12, 1911) several dozen pieces have been dug up. They are all small, and in no case did their position make it certain that any two belonged to the same pot. Only three small fragments of stone pots have been found in the course of the same excavations. Two of my Eskimo companions are from western Alaska—Kotzebue sound and Port Clarence. Both of them have watched the making of pottery by their own mothers and by other women of their tribes. They say that the pieces we have found are of the thickness and general appearance of western pottery, that the corners of the pots are similar and the perforations in the brim for swinging the pots are similarly placed. They differ, however, from the pottery they have seen made in the following two particulars: ptarmigan feathers were always mixed with the clay by their people while we have here found no signs of feathers of any sort; a little fine sand was used in the west mixed with the clay, while here fine gravel seems to have been used in some cases and in others cracked rock fragments probably made by pounding a friable stone with a hammer.

Our diggings near Point Stivens are in a river-cut bank. In the course of the work at a depth of four feet (sand), we found a layer of clay of unknown depth. This clay is said by my companions to be similar in appearance and consistency to that used by their parents for pottery in Alaska. In hunting, we have seen outcrops of similar clay along the river in several places.

At the present rate of accumulation we shall probably find half a bushel of pottery fragments in a hundred cubic metres of excavation. This large quantity, together with the presence of clay out of which the pots may have been made, might incline one to the view that the manufacture of pottery may have been carried on here, though that would be pushing east by a good thousand miles the known limits of the art of pottery making among the Eskimo.

In the same diggings we have found (besides a quantity of horn, bone, and stone objects of doubtless purely local origin) a lance fore-shaft of ivory (imported?), a fish hook with copper point (the hook of the western style, but the copper doubtless from the east), and several knife handles which show by the smallness of the socket that they must have held blades thinner than any stone blades I have ever seen—probably iron blades.

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are from the Alaskan coast, they and the Siberian goods must have had an even start thence for the east, and there is little doubt any metal articles would have outstripped them, for when one gets east of Bathurst one who brings pots from the west is carrying coal to Newcastle.

Between Herschel island and Cape Bathurst there do not seem ever to have been regular trading expeditions. As above pointed out, the Mackenzie delta and the vicinity were so much one community that there was promiscuous visiting back and forth at most seasons. Within this section the products and resources of one locality were so nearly identical with those of any other that the trading must have consisted chiefly in the westerners passing Alaskan wares east and the easterners passing eastern wares west.

From Cape Parry there were two trading routes to the east. The one, whose existence is to be inferred from the map, lay east along the mainland coast. The intercourse along this route has been completely forgotten by the people of Baillie island, who indeed, no doubt, seldom went farther east than Horton river—they themselves say they did not. The continuous chain of ruined houses, graves, and such signs of travel as broken sleds, paddles, etc., that connects Cape Bathurst with Cape Bexley is in itself proof enough that there was such traffic; besides, the easterners have not forgotten it, though the westerners have.

The second, less self-evident trade route led north from Cape Parry across the restless, never solidly frozen sea that separates the mainland from Banks island. The traffic here was carried on exclusively by the westerners—at least, so the Cape Bathurst people say. This accounts for the breaking off of the intercourse as soon as the westerners began to trade with the Hudson's Bay Company—the easterners did not know the route, and were afraid of the westerners, as the Rae River people were in Richardson's day and as they and all their neighbours still are. The Cape Bexley people dread the half-forgotten westerners with whom they once traded almost as much as the (to them) semi-fabulous Indians.

What the Cape Bathurst people traded east chiefly were the articles they had bought from the west; what they chiefly re-

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ceived were stone lamps and stone pots. They bought some copper too, but (within the last century or two at least) not much, for they were supplied from the west with Siberian metals.

The preceding sketch has been made briefer than even the fewness of facts at the writer's command makes imperative; in dealing with the tribes from Banks island to Back river an attempt will be made at greater thoroughness, not so much because the information is more abundant as because this district, as Boas has somewhere said, "is virtually unknown."

The tribes with which it is desired to deal more fully are by Boas, the foremost of living students of the Eskimo, apparently excluded from the "Central Eskimo" group. In a work which is fortunately at hand for definite citation, he says: "The last tribe of the Central Eskimo, the Utkusiksalirmiut, inhabit the estuary of Back river" (*The Central Eskimo*, Sixth Annual Report, Bureau of Ethnology, Washington, 1888). A century ago, while brisk intercourse was yet maintained, some cultural or other ground might possibly have been found for including them with their western neighbours among the Mackenzie River Eskimo, but the day for that is past. No geographic term descriptive of the district exists without being either too comprehensive (as "Arctic Coast Eskimo," cf. Hanbury), or not comprehensive enough and therefore misleading (as "Coronation Gulf Eskimo" or "Parry Island Eskimo"). Tentatively we shall in the present discussion give them a title from the chief commercial resource of their country—copper. Banks island and Back river may not define absolutely the area within which the production of implements of native copper had a decided influence on the culture of the people; on the other hand, future research may show that they do. Meantime, for our convenience in the present paper, we will refer to the below-mentioned tribes collectively as the *Copper Eskimo*. In the list, the winter residence of the tribe will be given first, and then the summer residence. Tribes visited on their own hunting grounds are designated by (1), those members which have been interviewed away from home are marked (2). The rest are known to us only through the accounts of members of other tribes.

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The *Kaṅhiṙyūatjīāġmīūt*, Minto inlet, Victoria island; between Minto inlet and Walker bay.

(1) The *Kaṅhiṙyūāṙmīūt*, Nelson head, Banks island, and Cape Baring, Victoria island; central Victoria island.

(1) The *Haneṙāġmīūt*, Dolphin and Union strait north of Cape Bexley; Victoria island south of Prince Albert sound, about long. 115°W.

(1) The *Akūīiakattāġmīūt*, Dolphin and Union strait north of Cape Bexley; the mainland about Akuliakattak lake, the source of Rae river, lat. 68°N., long. 118°W.

(1) The *Pāibliṙmīūt*, Dolphin and Union strait near Liston and Sutton islands; Victoria island north and northeast of Simpson bay.

(1) The *Nōahōniṙmīūt*, Dolphin and Union strait near Lambert island; the mainland south of Lambert island.

(1) The *Ualiṙyūāṙmīūt*, west end of Coronation gulf; upper Rae river.

(1) The *Pāllṙmīūt*, Coronation gulf, southeast of Cape Krusenstern; mouth of Rae river and head of Dease river.

(1) The *Kōġlūktōġmīūt*, Coronation gulf, southeast of Cape Krusenstern; Bloody fall on the Coppermine, Dease river, and Great Bear lake (McTavish bay).

(1) The *Nagyūktōġmīūt* or *Killineṙmīūt*, central Coronation gulf; Victoria island northeast of Lady Franklin point, the mainland east of Tree river. One family hunts habitually on Dismal lake near the head of Dease river.

The *Kīlūsiktōġmīūt*, Coronation gulf off mouth of Mackenzie river of Victoria island; Mackenzie region of Victoria island.

The *Kōġlūktūaiṙyūmīūt*, Gray bay and the Gulf ice off that bay; mouth of the *Kōġlūktūaiṙyuk* (which flows into Gray bay) up that river inland, and elsewhere.

(2) *The Umīñmūktōġmīūt*, Bathurst inlet at all seasons. Have talked with one woman of this tribe and obtained some information of them, but neglected the opportunity of getting from her the names of the other tribes of the vicinity. To the people about the Coppermine all those resident east of Gray bay on the mainland are known as Ūmīñmūktōġmīūt, and all those of Victoria island east of Mackenzie river are collectively known as

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Kīlūsiktōġmīūt. This is really no indication of what names may exist in that district. The people of western Coronation gulf travel little and the second tribe from them in any direction is likely to give its name to all beyond. (A striking parallel case is found in Alaska, where a small, never important, and now nearly extinct tribe, the Nūnatā́ġmīūt, has given its name to a dozen more important tribes and now appears in their place on ethnological maps and the census schedules of the United States government. I have talked with hundreds who are called Nūnatā́ġmīūt, and have found only three who are Nūnatā́ġmīūt).

(2) The *Ekallūktōġmīūt*, Albert Edward bay; central Victoria island.

The *Ahīā́ġmīūt*, Ogden bay (?); inland towards Back river and to the Akilinik river.

The *Kaernermīūt* or *Kainermīūt*, Back River inland at all seasons.

It will be noticed that as to the geographic distribution of the tribes, there is a blank in our information for the south coast of Victoria island from Mackenzie river to Albert Edward bay. This district is said to be everywhere populated, but my informant knew no name for the population other than Kīlūsiktōġmīūt. There are also sure to be several tribes between Gray bay and Ogden bay on the mainland, though I could find out only the one—Umiñmūktōġmīūt. Banks island is unpeopled in summer, for it was depopulated by a series of famines, the last of which took off the last few survivors about fifteen years ago. There are no people any longer north of Minto inlet on the west coast, and there may never have been any on the north coast, for so the Prince Albert Sound people believe. It is doubtful if there are inhabitants on the east coast of Victoria island north of Albert Edward bay.

We have now named, and located to the best of our present ability, the tribes whose natural resources and trade activities are to be discussed. The treatment is based on information secured on the mainland between Cape Bexley and Gray bay, and in southwestern Victoria island, between May 13, 1910, and May 17, 1911. For the first three months spent with

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these people we were handicapped by difficulties in understanding their speech and in making ourselves understood. After that I had little difficulty with the language, and my native companions (from Port Clarence, Alaska, and Mackenzie river) still less. There wore off, too, during this period, the distrustful reserve with which we were in the beginning treated as the first complete strangers who had to their knowledge ever come to live among them. Naturally the main part of what we know about their present and past commerce consists of what they have told us, and of apparently safe inferences therefrom. Some things we know "of our own knowledge," however, e.g., the sources of copper, kettle-stone, pyrites; certain of the land and ice trade routes; methods of travel, rate of travel, etc.

From the point of view of what an Eskimo wants and needs, the most westerly of the now existing tribes, the Kañhiŕyūăŕmīūt, had natural resources within the limits of their annual migrations as a tribe, which must formerly, even more than now, have made them nearly or quite the most prosperous tribe of the district we are considering. Their winter seat in Banks island (near Nelson head) is well supplied with seals for food and fuel, but so abundant are the polar bears whose meat and fat they prefer to seal, that in 1910-11 over 150 of the tribe's total of about 200 lived almost exclusively on bears—"and so it was with our forefathers too". The muskoxen, whose horns furnish them material for spoons and dippers for their own use and for trade, as well as for knife handles and a dozen other articles, are perhaps more abundant in Banks island than anywhere else in the region. Certainly the Haneŕăġmīūt and Pūiblĺŕmīūt have long been purchasing muskox horns and articles made of them—chiefly from the Kañhiŕyūăŕmīūt. Prince Albert sound (Kañhiryūak) from which the tribe gets its name, supplies them well with caribou in summer and autumn, and seals in the spring. The three chief rivers that fall into the head of the sound are all rich in fish which they spear and hook—nets are unknown. The south coast of the sound supplies them with driftwood sufficient for arrows and other small articles, but bows, sleds, pails, etc., they obtain by purchase. The mountains to the northeast of the sound furnish the chief article of com-

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mercial importance—copper. The metal is so abundant that not only do they gather in the summer enough to supply the wants of all their neighbours and to pay for most of their own imports, but it is found in such large, pure and easily workable masses, that they are induced to make of copper various articles which even among other copper gatherers (e.g., the Kōġiūktōġmīūt of Bloody fall) are made of bone or horn, such as the middle-piece of the seal harpoon, snow testers for discovering suitable building sites in winter, "feelers" for locating seal holes, etc. They find enough fire stone (pyrites) for their own use, though not equal in quantity or quality to that found among the Haneŕāġmīūt. Since 1855 or thereabout M'Clure's abandoned ship the "Investigator" and her caches on shore in the Bay of Mercy on north Banks island have helped the tribe to retain the mastery of the commercial situation locally. Though their last expedition to the wreck (which has long been broken up by the waves) was some fifteen or twenty years ago, articles of iron are even now more abundant and cheaper among them than among the more eastern groups who are nearer the present source of supply—Hudson bay.

At present the Sound people trade chiefly with three tribes—the Haneŕāġmīūt, Pūiblírmīūt, and Ekallūktōġmīūt. For a hundred or so years ago there are to be added, to our knowledge, the now extinct tribes of northwestern Victoria island and Banks island and the vanished inhabitants of Cape Parry. There may be copper in the district north of Minto inlet; there is almost certainly none in Banks island; there is quite certainly none on the mainland near Cape Parry so far as the Eskimo have discovered; this whole now deserted territory they must, therefore, have supplied with copper through indefinite periods of the past, as they now supply both southwestern and southeastern Victoria island (but not south-central Victoria island). What the western limits of the copper traffic were in early times future archaeological research may show; certainly some of it got beyond the Mackenzie delta.

Next in importance to their activities as original producers of copper, comes their traffic as middlemen in stone lamps and stone pots. They say (and the uniformity of type and material

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of the pots and lamps bears witness to it) that they "always" got all their supply from the Hanerāġmīūt and Pūiblirmīūt, while we know that these tribes bought them from the Nagyūktōġmīūt and others whose summer hunting grounds gave them access to the common source (I believe) of most stone lamps and pots east of Point Hope, Alaska—the Kōġlūktualuk river. It may seem at first sight that some lamps might have come from the more easterly, and long ago known to us, quarries near Back river, but in that case the Sound people would have received them from their most intimate friends, the Ekallūktōġmīūt, who are, and no doubt always were, their intermediaries in dealing with Back river. That this was so, is strongly negatived by the oldest now living Sound people, who say that formerly frequently, and now occasionally, they sold pots to the Ekallūktōġmīūt instead of buying from them.

The Cape Bathurst people still definitely remember that pots and lamps were the chief objects of the trips across from the mainland at Parry to Banks island. The Sound people now occupy Nelson head at the season (March) when these trips used to be made, and they say it was always so. I have, therefore, supposed they were the ones with whom the Parry people traded. The Sound people seem to have forgotten about this trade which the Bathurst people tell of, but this might be explained by supposing that the trade to them was never of great importance, that they did not know whence the visitors came, and that possibly only a few participated in the trading—the westernmost village of those which then, as now, stretched northeast from Nelson head to beyond De Salis bay. Possibly, however, the people met at Nelson head were of the proper inhabitants of Banks island who acted as middlemen between the mainland and Victoria island.

After stoneware, the chief import of the Kañhiryūārmīūt was wood, which came chiefly from the same two tribes as the stoneware, by routes which may here be conveniently described. The map shows it to be less than sixty miles across the peninsula south from the Sound to Dolphin and Union straits, but this short distance is over mountains and the Eskimo preferred to go around the southwest corner of Victoria island. The trips

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were, it is said, in recent times at least, usually made by the Sound people, and always in winter, for they do not hunt on the peninsula in summer, though the Haneŕăġmīūt do. Besides pots and lamps they purchased ready-made bows, sleds, snow-shovels, wooden platters, etc., and material for arrows, tent poles, and lance shafts. For these they paid with copper and copper implements, horn dippers and spoons, caribou skins, and possibly with articles received from Cape Parry.

The second route by which wood and stone were imported was across the neck of the peninsula from the southeast. This was a summer route. A party of the Sound people every year hunts southeast to meet the Pūiblĭrmīūt, who hunt northeast from Simpson bay. Here in midsummer they exchange exactly the same articles as they do with the Haneŕăġmīūt in winter—the pots and lamps they get from both tribes have a common origin as above pointed out; the wooden ware received from the Haneŕăġmīūt is all of Mackenzie drift wood, that received from the Pūiblĭrmīūt is partly driftwood gathered by themselves or purchased from the Akūlīakattăġmīūt, and partly live wood from Great Bear lake, chiefly purchased from the Kōġĭūktōġmīūt and Pălliŕmīūt.

The main trade resource of the Haneŕăġmīūt is firestone (pyrites), from a creek mouth east of Point Williams, with which they supply the entire Dolphin and Union strait, and Coronation gulf as far east as Cape Barrow, at least. Wood they trade only to the Kaŭhiŕyūăŕmīūt. This they gather in the fore part of winter on the mainland shore in the Akūlīakattăġmīūt territory or purchase it of the Akūlīakattăġmīūt—the two tribes camp together at Cape Bexley where they are visited before or during the dark days by most of the Pūiblĭrmīūt and by members of other tribes as far east as the Nagyūktōġmīūt. This constitutes at Cape Bexley a sort of midwinter fair, which probably is an ancient institution. Except as onlookers at this trading gathering, the Haneŕăġmīūt do not ever seem to have played an important part in the traffic between east and west—they were not situated geographically so as to be the natural middlemen between any other tribes except in

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handling stone ware, and here they were probably always far second in activity to the Pūiblĭrmīūt.

Of the still existing tribes the Akūlīakattăġmīūt have about the fewest natural resources—in fact, wood only, and in the sale of it they have to compete not alone with the Haneräġmīūt and Pūiblĭrmīūt who come to gather wood at their very door, but also with all the tribes members of which habitually or occasionally visit Bear lake. They no doubt were once an important link in the commercial chain along the coast from the Gulf to Cape Parry. This traffic and the intercourse with the western (just where located?) Eskimo, whom they call Ualinermūīt, is remembered by them as well as by the Nōahŏnĭrmīūt, Uallĭryumīūt, and Pallĭrmīūt. The westerners are disliked and feared by all, next to the Indians. There are living at Cape Bexley and elsewhere persons whose parents had their homes west along the coast well towards Cape Lyon—none of these belonged to that part of the westerners who are disliked, but we, coming from farther west, were considered to do so, and when we were found to be comparatively harmless we were said to be an improvement on our ancestors (I was by the Akūlīakattăġmīūt considered of the same race as my companions).

What west-going traffic there was through the hands of the Akūliakattăġmīūt must have consisted almost exclusively of stoneware, as the copper needed for the district beyond Parry would come logically from Nelson head. Of course the population between Capes Parry and Bexley may have received through the Akūlīakattăġmīūt, copper, the ultimate source of which was either Prince Albert sound or the Coppermine river and Dismal lake. This trade may have been of some volume, for the remains indicate a considerable population along the entire coastline. What they received from the west must have been confined pretty strictly to Alaskan goods, for the country between the Colville river and Cape Bexley does not, so far as we know, produce anything which formerly or now is not as abundantly to be had east of Cape Bexley, unless it were fishnets, and of their ever having been known to the people (except by hearsay) we have found no trace.

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A cosmopolitan gathering meets every summer on the north shore of McTavish bay, Great Bear lake. This is not comparable with the annual fairs of Barter island, the Colville delta, or Kotzebue sound; a parallel is found, however, even to-day, in the Akilinik River concourse—the "mysterious Akilinik of the Greenlanders" (Murdoch, quoted by Rink in a work not now at hand).[1] The characterizing thing common to Bear lake and the Akilinik river is that though there is plenty of game yet people do not come primarily to hunt; and though there is much trading, trade is not the chief object—every one who comes to either place comes to get wood for his own use and for trade with others.

In the area bounded roughly by the Coppermine on the east, Dismal lake and Kendall river on the north, Dease river on the west, and Great Bear lake on the south, there met, the summer of 1910, members of every tribe, except the Hanerấgmīūt, of those that frequent either shore of Dolphin and Union strait and Coronation gulf from Cape Bexley to the Kent peninsula, while we know that other years people from even as far east as Ogden bay may be found here. In other words, people who usually go to the Akilinik for wood, come to Bear lake occasionally for the same purpose. A glance at the map will show what a unifying influence these two gathering regions must have had on the culture of a large part of the Eskimo race. Even the Greenlanders knew of the Akilinik vaguely; it would be strange if careful inquiry on this head in Smith sound and Hudson strait did not bring out similar or more definite knowledge.

It may be thought that the flocking of the Eskimo to the vicinity of Bear lake is a thing of recent years, the opinion being based on the fact that none of the numerous travellers who have visited Bear lake have informed us on the subject. That they did not do so ceases to be strange when one remembers that the first and last of these had Indians for guides who know about where the Eskimo may be expected, who are in deadly fear of

[1] The Akilinik would not have remained so long "mysterious" (known only, so far as the writer is aware, through Greenlandic folk-lore) if travellers in northeastern Canada had taken the trouble to make geographic inquiries and to record the native names of conspicuous natural features.. It is one of the large rivers of Canada and one of the chief foci of commercial activity and cultural development of Arctic America.

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them, and carefully avoid their haunts. Besides, the white men usually had boats and always sought to follow routes where wood could be had for fuel; this confined them to the wooded valleys of the Coppermine, Kendall, and Dease, all of which (in so far as they are wooded) the Eskimo pretty rigidly avoid, through fear of the Indians. A journey made the summer of 1910 along the routes of Dease and Simpson, Richardson, Rae, or Hanbury would have revealed not a single Eskimo, nor would a coasting voyage of Great Bear lake have done so either. The Eskimo frequent the barren highlands, camp usually among mottled boulders where their mottled little tents are seldom discernible with the naked eye at over half a mile; they do not often make fire and never make large ones, and they keep a remarkably keen watch day and night, always ready to flee on hearing the report of a gun or seeing a man, a smoke, or a fresh trail or other sign of human presence. Even after we had been with them four months it was hard to keep them from fleeing precipitately on sighting a tipi camp, which proved to be that of the English travellers Melvill and Hornby (September, 1910), near the eastern treeline of the Dease river.

The Eskimo themselves say they "always" hunted to the shore of Great Bear lake (eastern part of the north shore of McTavish bay). The oldest of the active hunters (perhaps 45 or 50 years old) told us that, when they first remember, people in greater number than now used to hunt to the lake shore. Some had never seen signs of the immediate presence of Indians; one man had twice been in a party which had had occasion to flee from the very beach of the lake—once on hearing the report of a gun; another time on seeing smoke. (It may have been through hearsay from Hudson bay that they were able to identify the report of a gun as a sign of the nearness of Indians, for this happened when a man now forty years old, at least, was a small boy, and most of them had never seen a gun fired until we hunted with them. It is possible, of course, that the memory of firearms was preserved by the Pâlliṛmiūt (?) whom Richardson and Rae met some fifty years ago).

As the object is woodgathering rather than trade, the people who frequent the district never have occasion to come together

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at a single time and place. The largest camp we ever saw probably did not have over forty individuals and the total seen by us was not far from two hundred. There were, however, parties whom we never had the chance to see—some had come and gone before the band we were with reached Dease river (the first week in August), others came and went while we were hunting west and south of the main woodgathering place, which is a clump of remarkably heavy trees located on an eastern (unmapped) branch of the upper Dease which heads near the east end of McTavish bay and flows north, northwest, west, and last southwest to join the main Dease about twenty miles above its mouth. This clump of trees is known to the Bear Lake Slaves as "Big Stick island" and is about 25 miles, as the crow flies, from the mouth of the Dease, in a direction a little north of east.

The most westerly route from the sea to "Big Stick island" leads from the mouth of Richardson river to the narrows of Dismal lake. Here those parties that have kayaks ferry across while those without boats approach the lake some three miles farther east, where it is fordable along the west side of a group of willow-grown islands. From the narrows the road leads south about eight miles to the crest of the Great Bear Lake-Coronation Gulf divide and another eight miles down a small stream that runs through a chain of ponds to Imaeirnirk lake, the source of the middle branch of the Dease. The road then skirts the east shore of this lake for five or six miles, passes south over another small divide (between the middle and south branches of the Dease) to "Big Stick island." This route is followed generally by members of the Pūiblirmīūt, Nōahónirmīūt, Uallirȳūmīūt, Pállirmīūt, Nagyūktōġmīūt, and Kōġlūktōġmīūt. In 1910 the Kōġlūktōġmīūt were the only tribe whose full strength was found south of the Dease—the others were represented by groups of a few families. There were three families from Cape Bexley (Akūlīakattáġmīūt). Some years the entire Kōġlūktōġmīūt tribe spends the whole summer on Bloody fall of the Coppermine, and portions of other tribes occasionally fish there too. In 1910 there were no people at all anywhere on the lower Coppermine.

Other routes, whose minutiæ are unknown to me, lead from the sea to various points west of the Kent peninsula to the Cop-

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permine east of McTavish bay, cross the river there and strike the northeast corner of the bay. Those who followed this route sometimes did not get quite to "Big Stick island," for they found suitable wood in the Coppermine valley. In 1910 one party that came by it did not return by this route, but joined the Kōġlūktōġmīūt (or followed them, rather) going by the western route to the mouth of the Coppermine, and then proceeded homeward east along the ice of Coronation gulf.

Some of those bound for Great Bear lake come a greater or lesser part of the way by sled in the spring, others pack the entire distance from the sea. Some carry kayaks for spearing caribou, but these are seldom if ever brought farther south than the head of the middle Dease. In the autumn all go back to the sea by sleds made during the summer. Most returning families have, therefore, a sled to sell, for their old sleds are waiting for them on or near the coast. It is these sleds that eventually find their way to all parts of Victoria island and along the mainland towards Ogden bay until they meet the sleds that have come similarly from the Akilinik.

Immediately on arrival in the summer, at a source of suitable timber, trees are chopped down (with adzes—it is a half-day's job to chop down a tree 18 inches in diameter) and adzed into planks or "roughed" into other suitable shapes. These are then set to dry and the party proceeds south or west in search of game. In the autumn when ice begins to form on the smallest ponds the parties straggle to "Big Stick island" or to wherever their wood has been set to dry. Sleds are first made, and if the season is early, few other articles are finished, but are carried "in the rough" to the seacoast by the first suitable fall of snow. In 1910 the season was late, however, and while they waited on it, the men finished new bows, spear shafts, platters, pails, tables, planks for snowhouse floors, etc. Finally their supply of dried caribou meat ran low and some of them started off carrying their belongings on their backs north towards the divide, for they can always be sure of finding snow for their sleds at that season (the middle of October) when they near Dismal lake.

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In travelling by sled these Eskimo make short halts every four or five miles. Every such place is marked by a pile of shavings, for they are eager to get their wares in shape for sale on the coast; besides, the finished article is lighter to carry than the "rough" out of which it was made.

All the people who come to Great Bear lake by a route west of the Coppermine river find copper enough for their own use in the mountains north of Dismal lake. There seems to be plenty of the metal, but it is not found in such large masses nor so pure as in Victoria island. It is well suited for arrow and spear heads, however, though a piece large enough for a good knife or ice-pick is only rarely found. Some of the copper found here each summer is traded to members of the same tribes who have hunted in copperless districts, but little or none is sold to other tribes—indeed, both Victoria island and Bathurst inlet are better supplied than they. Those who come to Great Bear lake by a route east of the Coppermine river apparently get their copper mainly from Bathurst inlet.

The above-mentioned tribes that come to "Big Stick island" embrace most of the people who seek the kettlestone (soapstone) quarries on the Kōgĭlŭktualuk (Tree river, about long. 117° 30′ on the south coast of Coronation gulf). I have heard of one case from Cape Bexley of a family going all the way to the quarries to get a pot for their own use. This was considered at Cape Bexley a remarkable thing to do and the story is frequently told even now, though the event took place over twenty years ago. The woman of the family is still living. A song she composed to commemorate the event is still one of the most popular songs in Coronation gulf, as well as in the strait. What the eastern limit of the pilgrimages may be, we had no means to determine. It is probably not far east of the Kent peninsula.

But these distant tribes that occasionally send a family to the quarries get most of their pots and lamps by purchase. Wood and stone are, therefore, the export wares of the western half of Coronation gulf to the eastern half of it, to Victoria island, and to the Strait to the west.

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The market for wooden wares extends to-day to the north to the extreme limit of the inhabited districts; it may have been so in the past too, when that limit was farther north—Prince Patrick island, Melville island, and the others where ruins testify to a former population that may once have furnished the Gulf with customers. To the west the limit no doubt always was near Cape Bexley and to the east, as now, wares from Akilinik met those from the Gulf halfway. The stoneware has and had a wider field. Banks island and Victoria island almost certainly never had any other source of supply and the islands north of them may not have had any other; to the west Bering strait even may not have been the extreme limit of stone lamps made in the Gulf; to the east, however, there are competing stone-workers at Back river and perhaps even nearer than that.

The Ekalluktōġmiūt, so far as our inquiries could bring out, have no special commercial resources. They are, however, an important link in the chain of traffic from the Akilinik to Cape Parry and to Alaska—a chain that has now been broken at Nelson head. There are still, however, the important tribe of the Kañhiryūāṙmiūt and a remnant of the Kañhiryūatjiāġmiūt who deal with Hudson bay chiefly through the Ekalluktōġmiūt. They also meet the Turnunirohiṙmiūt of North Devon and the Netjiliġmiūt of King Williamsland, with whom they have dealings the nature of which we did not make out.

East of Victoria island among the islands and east of Kent peninsula on the mainland, our information is unfortunately as yet too scant to allow us to add anything of value to what was said above in the discussion of the trade routes.

It really follows from the preceding, but may be worth definitely pointing out, that a certain tribal specialization of industries and to a less extent a division of labour among individuals, has resulted from the differing natural resources of the various districts and the attendant intertribal commerce. I have found it characteristic of Eskimo generally (and especially of those west of Cape Parry) that each tribe believes the artifacts made by its own members to be superior to the corresponding articles made by ousiders. A few exceptions are known to me from western Alaska—few because of limited opportunities

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of investigation, no doubt, for industries there varied considerably among tribes. By the Port Clarence people the Unalit were considered to excel in the making of wooden ware, and practically none was made by the Port Clarence people, though materials were abundant. They depended almost exclusively on purchase from the Unalit and acted as middlemen between them and Siberia, though they could easily have made their own trading stock had they cared to. The Diomedes people were considered to excel in the making of waterboots and many were purchased of them, though sealskins were plenty at Port Clarence. Stone lamps were made occasionally, but they were considered poor compared with the "lamps from the east." The eastern lamps were supposed to "save oil"—apparently in a (to our minds) miraculous way. It was said that though a home-made lamp were a duplicate in shape and size of the imported article, it would use twice as much oil and give no more light or heat.

Among the Copper Eskimo the Haneŕăġmīūt are considered by the Kañhiŕyūăŕmīūt to excel in bow making, though bows are purchased also from the Pūiblĺŕmīūt. On the other hand, the sleds and tent sticks purchased of the same two tribes are under a reverse estimation—those from the Pūiblĺŕmīūt are preferred. As said above, the Pūiblĺŕmīūt make only part of the wooden ware they sell; a large part comes from the Pălliŕmīūt and Kōġlūktōġmīūt, who, therefore, deserve much of what credit there is in the sleds, etc., sold to the Kañhiŕyūăŕmīūt. The Kañhiŕyūăŕmīūt make bows only in an extremity, and consider them poor bows.

In general, those who get wood on Dease river finish only a few of the articles intended for sale—they finish all sleds and tent sticks and most tables, lamp stands, and floor planks. Snowshovels, bowls, dishes, etc., are generally sold "in the rough" and finished by the buyer.

Among the Nagyūktōġmīūt I found during the winter 1910-11, that a large snowshovel is one of the most valuable of a man's possessions. One I bought was valued at two butcher knives and sold reluctantly at that, while the same man offered me the better of his two dogs or a big new sled for one knife, selling the shovel for two knives only when he found he could

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not get even one of them for anything he had to offer—for I had long tried unsuccessfully to get a shovel.

It may be said, then, that the people who frequent Great Bear lake are not so much manufacturers of wooden ware as the gatherers and distributers of wood.

The people who have access to the mouth of the Kōg̊lūktualuk are manufacturers of lamps and pots still, though their market now can be but a small fraction of what it once was. To make a large pot (inside measure say 9 × 40 inches and 7 inches deep) is said to take all a man's spare time for a year, and some take two years to the making of a pot. Lamps are more quickly made. Certain individuals are considered expert pot makers, and many others attain old age without ever having made a large pot, though all have owned one or more. A man who spends the summer making a pot must live that summer on fish and must, therefore, to clothe himself and his family, buy caribou for the winter from those who have been at the caribou grounds while he was stonecutting. No man of these tribes probably ever devoted even half the summer of his active life to stonework, yet we have here the beginning of division of labour, the germ of a "trade". These pot and lamp makers furnish the best example known to me both of specialization of industries by tribes and of the division of labour among individuals. The division of labour between the sexes hardly finds a logical place under the title chosen for the present paper, as its dependence on natural resources and commerce is not close nor self-evident, though to a degree there no doubt is such dependence.

Though the Kañhiŕyūā́ŕmīūt are the largest producers and exporters of copper within the district, they have not developed into manufacturers of copper implements as the tribes near the soapstone quarries have developed into pot-makers, probably because copper is more portable and its uses are more varied—for cutting and stabbing weapons, fish-hooks, tools, shafts and rods, ice picks, patches for articles of horn, bone and wood, rivets, needles, etc. The material for a copper knife weighs less than the made knife—the caribou horn handle can be added by the member of any tribe: a pot probably does not weigh over 10 per cent or 15 per cent of what the block weighed that went to make it,

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which explains why the pot must be made by anyone who wishes to profit by the accessibility of pot-stone. The Kañhiŕyūā́ŕmīūt do, however, sell a considerable number of made copper snow-knives—long two-handled double-edged knives which they and other tribes copy faithfully in iron, when the iron is available.

The Parry Peninsula
July 25, 1911.

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The first number of the Museum Bulletin was entitled, *Victoria Memorial Museum Bulletin Number 1.*

The following articles of the Anthropological Series of Museum Bulletins have been issued.

Anthropological Series.

1. The archæology of Blandford township, Oxford county, Ontario; by W. J. Wintemberg.

2. Some aspects of puberty fasting among the Ojibwas; by Paul Radin.

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(Reprint from "Science and Industry," Vol. II., No. 8. August 1920.)

Nature *versus* The Australian.

By GRIFFITH TAYLOR, D.Sc., B.E., B.A., Associate Professor of Geography, University of Sydney.

All Australians are anxious to see their homeland develop speedily, so that it may come as soon as possible into its proper place in the comity of nations. There are two distinct methods of helping toward this happy goal. One of these follows what we may call commercial lines, and the other (not necessarily antagonistic) travels over the accepted routes of scientific research.

The former plan may be likened to putting all the best goods into the window, and, having attracted the customers, to see that they purchase something. The other method is to give as much attention to the less valuable assets as to the most attractive, in the full belief that thorough knowledge will pay best in the end. The only antagonism arises when the exponent of the former method complains that the scientist spoils his chances by a too-open discussion of disabilities which were better discreetly hidden!

However, there is much less of this false patriotism nowadays. The authorities are encouraging the investigation of the physical controls which govern conditions in our less populous areas, believing that only by so doing can we make the best of our heritage. It is entirely with the object of helping this good work that the following article is written —for, to continue our parable, nothing can be such a bad advertisement as a misled or discontented purchaser.

One may misquote a well-known saying—"They little know of this lone land, who only this land know"; and we can only hope to arrive at the possibilities of Australia and can only estimate its resources by comparing them with similar assets in other countries. Isolation has its advantages in some respects. The "tight little island" no doubt kept free from medieval wars, but its marvellous progress was chiefly due to its natural resources in climate and coal. Here in Australia isolation is also advantageous in times of trouble, but in times of peace it tends to react adversely on the national character, fostering, perhaps, too optimistic a trust in Nature's endowment of the continent.

This article will therefore be largely concerned with comparisons based on recent physiographic research, and we shall find that we have reason to be proud of the future of Australia, even though it is not so well endowed as the older centres of white settlement.

Australia is particularly well suited for climatic studies, since it has the least diverse topography of all the continents and the most uniform outline. Hence it is free from variations due to elevated plateaux, high ranges, or deep gulfs and inland seas.

Unfortunately, these very characteristics are a distinct handicap as a dwelling place for man, and we may well devote some time to a consideration of how such physical controls affect Australia.

If we glance at a world-map representing either population, or vegetation, or rainfall, we shall find that the most striking feature in all three maps is the belt of empty arid lands which lies along the

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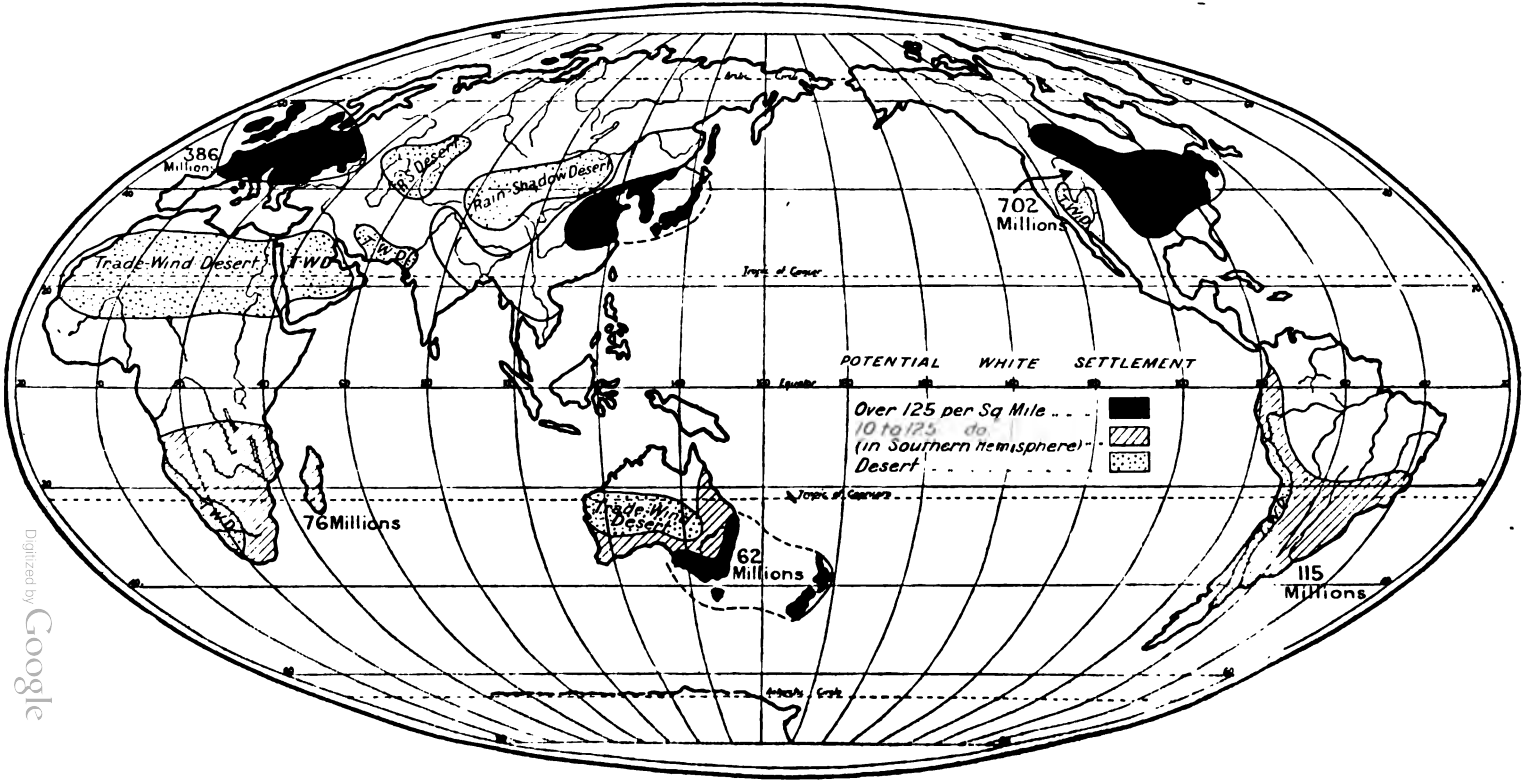
FIG. A.—THE STATUS OF AUSTRALIA AMONG THE CONTINENTS.
(Only potential WHITE Settlement is considered.)



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tropics in both hemispheres. (See Fig. A.) These are the regions where the trade winds are supreme; and where they blow from the continents to the ocean they are desiccating winds. Their realm covers half the surface of the globe, and where a broad belt of land is affected (as in Australia and Northern Africa) the result from an economic point of view is well-nigh disastrous.

Here, then, is the first and the chief burden which Nature has laid on the Australian. Nothing can make up for the large extent of our continent which lies below the constant sweep of the desiccating trade winds. It is no help to know that in fairly late geological times the continent extended into more clement regions to the south and east where the climate was undoubtedly better suited for closer settlement.

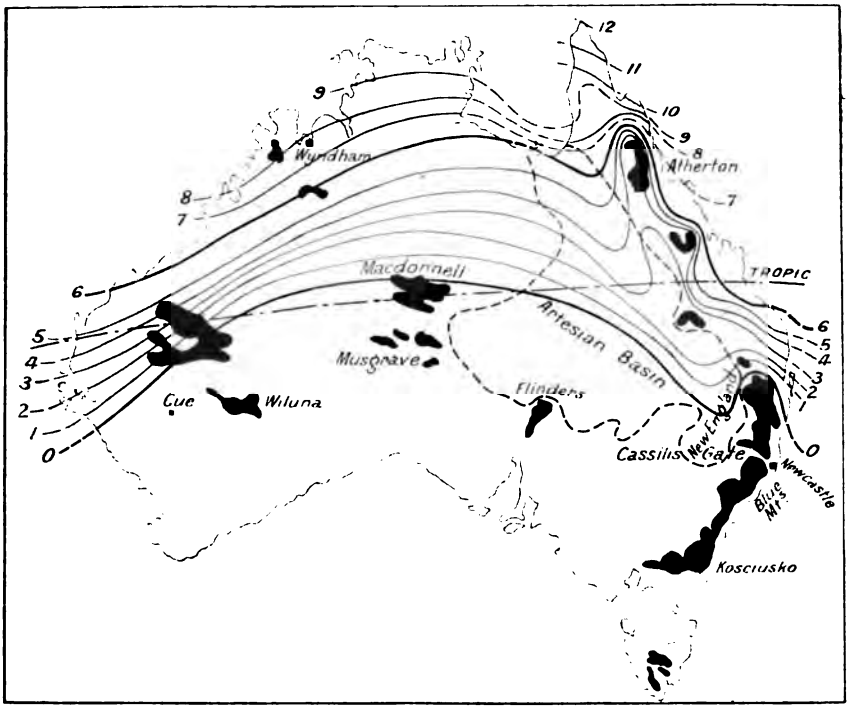

FIG. B.

The figures show the number of months with an average wet bulb over 70° F. The black areas are over 2,000 feet above sea-level.

In Cretaceous times our land probably extended from Adelaide to Macquarie Island and New Zealand. Moreover the trade wind belt was interrupted by a great sea (extending from the Bight to New Guinea), in which were deposited our well-known artesian water-bearing strata. At this date the Western Australian interior (now a desert)* was almost certainly visited by constant rain-bearing winds, and the

* Desert in the geographical sense is country receiving less than 10 inches of rainfall, and at best capable only of sparse pastoral occupation.

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vegetation was correspondingly luxurious. Possibly the eighty palms which occur in Palm Valley in Central Australia are the last descendants of this luxurious flora.* We must go 500 miles away across barren sandridge country to the north to find another specimen.

There is, of course, some compensation in the well-watered east coast for the barren interior and west. Queensland owes much of her prosperity to the constant south-easters, which give her the heaviest rainfall in the continent. Hereabouts they blow from sea to land, and impinging on the elevated coastlands, they deposit as much as 14 feet of water per annum in the Cairns district.

There is little doubt, however, that a site some ten geographical degrees to the south of our present position would have made Australia a rival of the United States of America, whereas her natural assets cannot compare with that country. Our latitude is, therefore, a severe handicap.

We may now consider the topography in some detail. Here also it must be admitted that most large land areas are better served by Nature. In temperate lands large areas of lowland are the most suitable for white settlement, while in the tropics plateaux are much to be desired, as far as the comfort and health of the white race is concerned.

Large areas of tropical America (North and South), of Asia, and of Southern Africa consist of highlands over 2,000 feet above sea level. Only in Northern Africa and Australia has Nature been niggardly. It is an instructive parallel to compare Rhodesia with tropical Australia (which is a little over double its area). About 90 per cent. of Rhodesia is a plateau with a correspondingly cool climate. Only 4 per cent. of tropical Australia is so favoured. (See Fig. B.)

In the Atherton plateau, in North Queensland, we have a most valuable tract of country, where farming and dairying are already being extensively carried on. It is situated within 18 degrees of the Equator, and an area of some 12,000 square miles is 2,000 feet above the sea. No doubt electric power will be developed on the eastern flank of the plateau, which dips steeply into the Pacific, and is watered by many small rivers.

But it stands almost alone. On the tropic is the Macdonnell Range region. This, however, is in the centre of the trade wind area, and the rainfall is too low for a heavy population, although the climate is excellent for the greater part of the year. In the Kimberley region, in Western Australia, is another small plateau, and near the Fortescue River (on the tropic also) are some highlands. Temperature and rainfall conditions are somewhat adverse in both these regions, and they can never approach the Atherton plateau as a nucleus of white settlement in the tropics.

It is often stated that a high range, resembling the Andes, in the heart of the continent would save our interior. This is improbable. If we look at similar latitudes in South America we see that the flanks of the Andes where they cross the tropic have a rainfall below 10 inches,

* Probably in Pliocene times this region was much better watered. (See "Climatic Cycles," in Bibliography.)

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although they tower 25,000 feet above the sea. If the atmospheric currents contain no moisture, it matters nothing if the mountains deflect them high up into cooler regions—no rainfall can be condensed.

In our temperate areas it would doubtless be an advantage if the highlands were disposed at some considerable distance from the sea in place of being elevated along the actual margin of the continent from Cooktown to the Victorian Grampians. We should then have many "Yarra" and "Hawkesbury" rivers—perhaps rivalling the Murray in size. They would be fed by numerous tributaries and bordered by fertile plains. Under present conditions our largest rivers resemble the Nile, their lower courses being situated in much more arid country than the headwaters. Thus the Diamantina, Barcoo, and Paroo rarely reach their outlets. The Warrego, Darling, and Lachlan often cease running, while the Murray occasionally dries up as it traverses the lowland belt, which receives only 10 inches or so of rain per annum.

However, all this country is favoured by its geological structure. Given a region with insufficient rainfall, it is obviously an enormous asset if a subterranean supply can be tapped. In the eastern half of Australia Nature has compensated for her disposition of the highlands by placing a series of permeable sediments (at various depths to 5,000 feet below the surface), in which a considerable proportion of the rain is collected. The origin of the artesian water is still a vexed one, but the balance of opinion certainly favours present rainfall, and possibly Pleistocene ground-water rather than "plutonic" sources. There are also several other small artesian basins, but they do not compare in importance with the Queensland basin. (See Fig. B.)

Warping in fairly recent geological time has built up the main divide in Queensland and New South Wales. The upturned edges of the mesozoic sediments are supposed to catch the rain in the better watered areas, and carry it slowly to the north, west, and south-west. Some of it bubbles up naturally in the mound springs near Lake Eyre on its western boundary. In Queensland alone there are 2,000 artesian bores, and there are also many in north-west New South Wales and in the north-east corner of South Australia.

Unfortunately, there is little hope of this water amounting to more than is required for stock. It is doubtful if it can ever be used for agriculture. It is folly to state (as in a recent imposing publication), "As 22,000 square miles of Algeria have been reclaimed by artesian water, there is no part of Australia in which cultivation may not become ultimately possible." The truth is (unless we get settlers of the Indian ryot class) that there is little hope of any cultivation of importance based on this supply. On the other hand, the prosperity of the pastoralists in Western Queensland is largely due to this form of Nature's bounty. Unfortunately, the supply is certainly diminishing.

Some readers may be surprised that so little mention is made of irrigation. While this may lead to the settlement of many thousands in favoured localities, it can make no practical difference to the general character of a continental surface. There are about 1,000,000 square miles in Australia receiving less than 10 inches per annum. In Victoria there are about 600 square miles of irrigated lands; in New South

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Wales about 400, and quite negligible areas elsewhere. Hence, with the choicest sites occupied (though not necessarily half of those available), only about *one part* in *a thousand* of the lands needing irrigation has been benefited.

One other aspect of the topography merits some attention. All our important highlands are collected along the eastern and south-eastern coasts. They are probably largely due to wrinkles in the earth's crust, formed by pressure directed against the Western Australian massif. (We see certain drowned "wrinkles" of similar origin in the festoons of islands—Solomons, New Hebrides, Tonga, New Zealand, &c.—which border our eastern seas.)

Hence our main mountain valleys are usually disposed along a north-south axis, and they obviously lie in just the wrong direction for facilitating access to the east coast. The rivers have a tendency to flow in meridional lines, as in the Snowy, upper Murrumbidgee, Tumut, upper Lachlan, Shoalhaven, Nepean, upper Clarence, Dawson, Burdekin, &c., and this disposition of the "grain" of the country has necessitated very difficult railway grades just in the most populous part of our country. For years it absolutely prevented the construction of coastal railways, which are only now creeping slowly from port to port.

From the Darling Downs, in Queensland, to Kilmore, in Victoria, there is only one natural gap in the highlands below 2,000 feet (at Cassilis, behind Newcastle). This is a distance of 800 miles, and it is extraordinary that no railway has yet taken advantage of this low grade, which leads directly from our chief coalfield to the interior. (See Fig. B.)

Per contra, the coral polyp has taken advantage of the warping shore line of Queensland, and has built up a battlement of coral reefs for 1,000 miles in the same north and south direction. This insures one of the calmest sea routes in the world, though possibly the sea-captains could dispense with the placid seas if they were free from the dangerous and ever-growing reefs!

Let us now glance briefly at the climatic controls which affect the development of Australia. We are concerned primarily with temperature and rainfall, but we shall find that the humidity is of great importance in connexion with tropical settlement.

Since the southern hemisphere consists so largely of water, it is natural that on the whole it should have a cooler temperature than the northern. But where large masses of land are involved this difference practically vanishes. Tropical seas have a temperature of 80 degrees F. fairly generally, and the effect of a large ocean does not extend indefinitely inland. If we consider actual temperature records we find that four regions in the world exceed an annual average temperature of 84 degrees F. These are around Timbuktu, Massowah (on the Red Sea), Tinnevelli (at the southern tip of India), and Wyndham, in north-west Australia. The two former are arid. The two latter are very wet in the hot months. Hence Wyndham (with 84.6 degrees F.) is undoubtedly one of the least favoured regions in the world so far as temperature is concerned.

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The "heat equator" must be drawn through Wyndham, Darwin, and Thursday Island, for these places are much hotter than any to the north or south. We are unable, therefore, to say that tropical Australia is cooler than other similarly placed regions, with the possible exception of North Africa. (The current temperature maps have fostered the error by recording temperature reduced to sea-level instead of the actual temperatures of the places concerned. Consider what this means for regions like Mexico.)

Heat as such is not of paramount importance, provided it be dry heat. In this respect Australia is fortunate in her arid interior, for the humidity is never very high except in the coastlands. Throughout

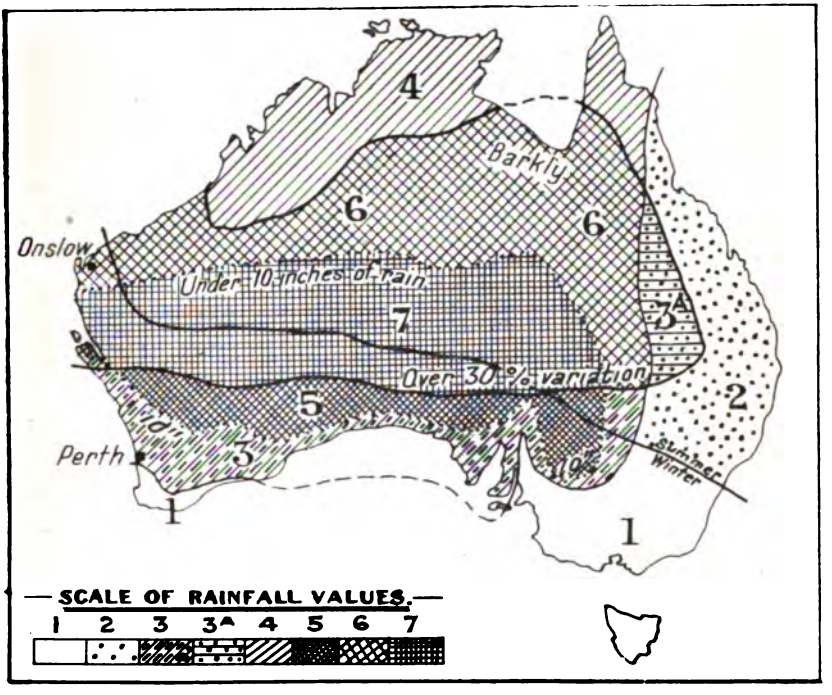

FIG. C.

Economic regions of Australia based on variations in the amount, season, uniformity, and reliability of the Rainfall. (For regions see Text.)

the summer months only the region north of a line through Broome, Daly Waters, and Rockhampton has a high humidity. It is very hot inland, certainly, with many days in succession over 90 degrees. The human organism can bear this without much discomfort or loss of health, provided the air be dry—but it is otherwise with plant life. Hence, from a hygienic point of view, a low rainfall is desirable in our tropics, but from an economic point of view this is disastrous.

We shall do well to consider the incidence of the rainfall at this stage, for this element is the controlling factor over almost the whole

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of our continent. Every one knows that our fertile areas are disposed like a green garland around the arid interior. The wreath is broken on the west coast, where the out-flowing trade winds have dried a belt from Shark Bay to North-west Cape. It is very narrow along the Bight, and appears to be very broad along our northern coasts; and, of course, the belt of pasture and forests is best developed down the eastern coast.

If we watch how the rain belts vary from month to month we find that they march south with the sun. In mid-summer the northern belt (fed by tropical low-pressure systems) extends to Alice Springs. In winter the southern belt (controlled partly by Antarctic systems) moves north to Port Augusta, or farther. (See Fig. C.)

Hence there is a drought in the north during the colder months, and a drought in the south during the warmer months. This distinction is perhaps more important than the season of the rain, as we shall see later.

In the centre and west centre the rainfall is very low, and is due to erratic thunderstorms. In the east special coastal storms favour the littoral at most times of the year, especially in autumn; and in Queensland, as we have seen, the trade wind brings rain almost all the year round.

Hence our chief rainfall regions are four in number:—The uniform rain in the east and south-east; the winter drought region in the north; the summer drought region in the south and south-west; the arid region in the centre and central west coast. All our primary industries—other than those of mining—are determined by these conditions, but one further feature remains to be discussed.

It is a truism that if the rainfall were only reliable it would not matter so much if it were comparatively small in amount. By long experience farmers have learnt that in the Western Australian wheat belt a lower rainfall will suffice than in western New South Wales. Now that our records are fairly complete in many parts of the Commonwealth it is possible to study this aspect scientifically.

Consider the following table, where the same months in *consecutive* years have been taken at the places named.

UNRELIABLE RAINFALL.

Onslow (Western Australia) ..	April, 1900 .. 11·0″ „ 1901 .. 0 (April Average, 0·9″)	May, 1900 .. 10·5″ „ 1901 .. 0·5″ (May Average, 1·5″)
Borroloola (Northern Territory)..	March, 1899.. 29·0″ „ 1900 .. 0·5″ (March Average, 6·0″)	Feb., 1896 .. 21·4″ „ 1897 .. 4·7″ (Feb. Average, 7·4″)
Charlotte Waters (South Australia)	March, 1908 .. 5·0″ „ 1909 .. 0 (March Average, 0·7″)	Jan., 1877 .. 9·7″ „ 1878 .. 0 (Jan. Average, 0 8″)

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One often hears that agriculture may be found profitable in the interior where the *average rainfall* is 10 inches, because wheat can be grown with such a rainfall in the Mallee or in the northern region of Western Australia. As a matter of fact, none of the Mallee is below 10 inches—and I have never been able to find a region in Western Australia below 10 inches where wheat is grown at all regularly.

If the rainfall at the right season exceeds 11 or 12 inches, and is *reliable,* well and good. But, as I shall now proceed to show, the greater part of arid Australia is cursed, not only by a low rainfall, but by a very uncertain one. By a method of reckoning, which I have explained elsewhere,* I have drawn up the reliability isopleth† shown in Fig. C.

The most variable region in Australia is around Onslow (W.A.) The best is around Perth, in the same State. The reason for the success in wheat in the south-west corner (Swanland) is shown at a glance. All the arid country (under 10 inches per year), except in Swanland and along the Trans-Australian Railway, has a variability exceeding 20 per cent. of its average total. Moreover, a great deal of the country, with better rainfall—especially to the south of the Gulf of Carpentaria—has also a very erratic rainfall. Thus the Barkly Tableland seems to be a very unpromising agricultural region, in spite of its average of 15 or 20 inches a year.

As regards future prospects of settlement as based on rainfall, we may subdivide Australia into seven regions. In the following table the regions are arranged approximately in order of value. (See Fig. C.)

Class.	Sub-class.	Chief Localities.
1. Uniform	With winter maximum ..	Riverina, Victoria, Tasmania
2. „	With summer maximum ..	Eastern Queensland, north east of New South Wales
3. Seasonal, but reliable ..	Moderate winter rain ..	"Swanland" (Western Australia)
4. „ „ ..	Summer rain	Kimberley and Northern Territory
5. „ „ ..	Arid winter rain ..	Coolgardie to Broken Hill
6. Erratic	Summer only	Pilbarra, Macdonnells
7. „	Arid only	Central Australia

Our agricultural and pastoral production can be classified in terms of these regions. Thus all the important timber areas are confined to the uniform belts. Here are the soft woods of the Queensland coast—

* See Fig. 125 in *Australian Meteorology*, 1920. (Oxford University Press.)

† *Isopleth*, a term akin to contour; *i.e.*, a line through localities experiencing the same conditions.

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the hardwoods of the south-east and of the south-west. Contrary to existing vegetation maps, there are no tropical rain forests of any value along the north coast, for the long winter drought prohibits their growth.

The farming and close white settlement area is also confined practically to regions 1, 2, and 3. Sheep are found chiefly in 1, 2, 3, and 5, though a few (perhaps 2 per cent.) occur in 4 and 7.

Cattle will do well in rougher, hotter country than sheep, and so predominate in 4, and are fairly abundant in 6. Dairy herds, of course, exist throughout 1, 2, and 3. I have worked out the climatic controls for cattle, sheep, and wheat very fully in Meteorological Bulletin No. 11, Melbourne, 1916, which is illustrated by 18 maps in colour.

A very important asset is the mining industry. Remembering the settlements at Kalgoorlie, Broken Hill, and elsewhere, one is apt to attach, perhaps, too much importance to mining as a means of settlement. It has been calculated that only about 120,000 people are settled in mining regions which would otherwise hardly be inhabited. Many of our mines are in good pastoral and agricultural land, where it is difficult to say what would have occurred if the mines had not been discovered. However, there is no doubt whatever as to the value of the early gold mines of Broken Hill, of Mount Morgan, Kalgoorlie, and the West Tasmanian mines in attracting settlers to Australia. The population graph shows very clearly a direct response from abroad; and, of course, much of this wealth is used to develop many other phases of activity.

The mineral wealth does not lend itself to generalizations so readily as do the climatic controls. One may, however, point out that the geological map naturally gives a very good clue to future mineral regions. For instance, many people fancy that the unknown arid interior is very likely to produce another goldfield region, like that extending from Southern Cross to Laverton and Cue in Western Australia. This is distinctly unlikely, for there seems to be a great change in the geological structure a little north of the Cue-Wiluna line. (See Fig. B.) The strata are much less disturbed, and probably much newer. In fact, we can say safely that no such widespread field can possibly be discovered, though smaller fields and valuable mines will doubtless be opened up from time to time.

All the lowland country from the Gulf of Carpentaria to the mouth of the Murray is also too recent and undisturbed for mineral solutions to have penetrated it. However, no one can say that Nature has been niggardly in her store of mineral deposits in Australia.

The chief interest to the economist, perhaps, lies in the coalfields. The surpassing wealth of the United States of America, of Britain, and of Germany is almost wholly due to their stores of buried energy. The much-talked-of "decline" of France is due to her meagre supplies of industrial fuel. Lack of coal has hampered her industries—whereas all

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the great white populations have developed on the coalfields. (See the most valuable article by "Politicus" in the *Fortnightly Review* for February, 1918.)

Since this is the most convertible of Nature's gifts to man, I have tabulated the world's chief sources of supply. (From the Geological Congress Reports on the Coal Resources of the World.)

	Tons of coal x 10^9	
1. U.S.A.	3,838	The great coal countries.
2. Canada	1,234	
3. China	995	
4. Germany	423	Important coal countries.
5. Britain	189	
6. Siberia	173	
7. Australia	165	
	7,017	

The world's available supply is said to be about 8,000 x 10^9 tons, so that these seven countries control practically the whole amount. India (79), Russia (60), South Africa (56), Colombia (27), France (17) and Belgium (11) obviously follow a long way behind.

It is gratifying to see that Australia ranks fairly high in the list. Her fields are all distributed along a belt from Hobart to Townsville, but the chief settlement will always be around Sydney, Morwell, Brisbane, and in the Fitzroy basin. As we have seen, this is the best favoured region as far as climate is concerned, so that Nature herself seems disposed to bring about more and more centralization.

One problem to which much attention has been given still remains to be discussed. This is the probable trend of settlement in our tropics. Obviously the most logical method is to find what foreign regions will compare with our regions, and to see what experience teaches in those regions.

While bare climatological data do not completely define the environment of a locality, still they give valuable clues. I have published elsewhere a table showing that Broome is a homoclime (similar climate) of Banana at the mouth of the Congo.* Carnarvon and Wiluna resemble German South-west Africa. Darwin is like Cuttack, on the east coast of India, Townsville is like Calcutta or Rio, and Wyndham like Tinnevelli, at the tip of the Peninsula of India.

These parallels must give any one pause who wishes to settle white women and children on our northern tropical coasts. The matter is not fully investigated, and it is quite possible that the wind factor (which is rarely recorded in suitable form) may have an ameliorating effect on the human organism. We have, however, no valid reason for believing our winds to be more beneficial than the winds of these other tropical localities.

An appeal to the readings of the wet bulb thermometer (which were long ago installed by the Commonwealth Meteorologist) gives no more favorable results. If we assume that an average monthly reading of

* *Australian Meteorology*, 1920. Oxford University. (229 illus.)

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70 degrees wet bulb is the limit of comfortable living for white families, then the following table is not encouraging as regards our northern coast lands. . (See Fig. B.)

SCALE OF DISCOMFORT, BASED ON AVERAGE WET BULB.

Based on the Graphical Study of Climate in Meteorological Bulletin No. 14.

	45°–55° F. most comfortable.	55°–65° occasionally uncomfortable	65°–75° often uncomfortable.	Over 75° F. almost continuously uncomfortable.
	Months.	Months.	Months.	Months.
Melbourne	6	6	0	0
Sydney	5	7	0	0
Hobart*	6	3	0	0
Coolgardie	7	5	0	0
Perth	5	7	0	0
Alice Springs	5	6	1	0
Brisbane	3	4	5	0
Townsville	0	3	9	0
Nullagine	0	5	7	0
Wyndham	0	3	3	6
Darwin	0	0	6	6
Thursday Island	0	0	6	6
Wellington (New Zealand) ..	8	4	0	0
London*	5	3	0	0
New York*	4	3	2	0
Batavia	0	0	10	2
Madras	0	0	6	6
Sierra Leone	0	0	0	12

* Some months below 45° ; *i.e.*, cool, but comfortable.

However, in this, as in other controversial points, the last word is not yet said. But obviously our tropical problem is a climatological one, and it would seem obvious that money might well be spent on an investigation along these lines.

In no other portion of the world, so far as I am aware, is there a settlement of northern Europeans resembling our sugar-growers in the Cairns district. In Brazil, near Rio, are some Spanish and Portuguese —but they belong to a much warmer clime originally. All honour, therefore, to the Australians, who are very practically fighting Nature in their attack on the luxuriant wealth of the tropics.

I must not neglect to point out that we have been favoured with an almost complete absence of the worst tropical diseases. Malaria is certainly diminishing under adequate sanitary treatment. Yellow fever and beri-beri have never been of any great importance. These diseases have been the greatest enemies in other tropical regions, so that the paucity of our aboriginal population would seem to be a distinct advantage as lessening the risk from such contagious diseases.

I have now traversed rapidly most of the ground indicated by the title of the paper. In conclusion, it has seemed to me possible to make a first approximation to a map showing the *habitability* of the earth.

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The study of future white settlement gives very definite conclusions as to the status of Australia. By dividing the world into 74 natural regions, each assessed quantitatively for (1) temperature, (2) rainfall, (3) coal, (4) location, it was possible to draw up a map which showed the areas of potential white population. Western Europe, Eastern North America, and North China (though this does not concern white folk) showed the highest figures—with considerable areas where over 200 people to the square mile would settle.

The United States is well entitled to call itself (in the material sense at least) "God's Own Country." The Japanese realize the value of Northern China, and hence they desire to obtain control of it. In the southern hemisphere, New Zealand and South-east Australia are the most favoured, being able, perhaps, to take ultimately 120 people to the square mile. There are, however, much larger areas of moderate habitability in South Africa and South America. (See Fig. A.)

Grouped in nations, we may show that the British Empire (when it is "saturated" to the extent of Europe to-day) may reach a potential white population of 377,000,000.

The following table gives my conclusions for a future date, which is by no means outside the province of present-day politics:—

TABLE INDICATING FUTURE WHITE SETTLEMENT.

—	British Control.	U.S.A. Control.	Other States.	Total.
	Millions.	Millions.	Millions.	Millions.
1. North America	179	513	10	702
2. Europe	60	..	326	386
3. Argentine, &c.	..	..	115	115
4. South Africa	76	..	6	82
5. Australia and New Zealand ..	62	..	..	62
Total	377	513	457	1,347

It was not possible within the limits of this article to give much of the data on which my conclusions are based. Readers who are interested may consult the following books and memoirs by the writer:—

1. *Text-book of Australian Meteorology.* (229 illus.) 1920. Oxford University.

2. *Australian Physiography.* (3rd edition revised.) 1919. Oxford University.

3. *Climatic Control of Australian Production.* 1915. Meteorological Bulletin 11, Melbourne.

4. *Control of Settlement by Temperature, &c.* 1916. Meteorological Bulletin 14, Melbourne.

5. *The Australian Environment.* (180 illus.) 1918. Memoir 1, Commonwealth Institute of Science and Industry.*

* A fairly complete Bibliography of kindred literature appears at the end of the monograph.

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6. *Settlement of Tropical Australia.* 1918. *Royal Geographical Society,* Brisbane.*

7. *Climatic Factors in Australia.* 1918. *Commonwealth Year-Book,* Melbourne.

8. *Physiographic Control of Exploration.* 1919. *Geographical Journal,* London.

9. *Climatic Cycles and Evolution.* 1919. *American Geographical Review,* New York.

10. *Agricultural Meteorology of Australia.* 1920. *Quarterly Journal, Meteorological Society,* London.

11. *The Fringe of the Australian Desert.* (In the press.)

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* Republished by the American Geographical Society, August, 1919.

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